Energy levels and branching ratios [93Bh02]. **$^{71}_{34}$Se**

E^*	$2J^\pi$	$T_{1/2}$ or		Branching ratios in percentage						
			E_f^*:	0.0	48.79	260.48	282.44	1040.6	1154	1298.0
[keV]		Γ_{cm}	$2J_f^\pi$:	5^-	1^-–9^-	$\langle 9^+\rangle$	$\langle 3^-\rangle$	$\langle 7^-\rangle$	$\langle 11^+\rangle$	$\langle 13^+\rangle$
0.0	5^-	4.74(5) m								
48.79(5)	1^-–9^-	5.6 μs		100						
171.52(6)				55(4)	45(3)					
260.48(10)	$\langle 9^+\rangle$	19 μs		100						
282.44(8)	$\langle 3^-\rangle$			28(5)	72(5)					
647.80(18)				42(8)		58(8)				
756.97(15)				66(7)			34(5)			
796.4(4)				100						
1040.6	$\langle 7^-\rangle$			55			45			
1154	$\langle 11^+\rangle$					100				
1298.0	$\langle 13^+\rangle$					100				
1493.5	$\langle 13^+\rangle$					100				
1639.3	$\langle 13^+\rangle$					100				
1680.5	$\langle 11^-\rangle$							100		
2326.9	$\langle 17^+\rangle$									
2418	$\langle 15^+\rangle$								52	48
2448.5	$\langle 17^+\rangle$									100
2481.2	$\langle 15^-\rangle$									
3236.7	$\langle 21^+\rangle$									
3426.6	$\langle 19^-\rangle$									
3452	$\langle 19^+\rangle$									
3635.1	$\langle 21^+\rangle$									
4300.9										
4497	$\langle 23^+\rangle$									
4504.1										
4834.3	$\langle 25^+\rangle$									
6035.3										

Energy levels and branching ratios [93Bh02]. Part 2 **$^{71}_{34}$Se**

E^*	$2J^\pi$		Branching ratios in percentage									
		E_f^*:	1493.5	1639.3	1680.5	2326.9	2418	2448.5	2481.2	3236.7	3426.6	3452
[keV]		$2J_f^\pi$:	$\langle 13^+\rangle$	$\langle 13^+\rangle$	$\langle 11^-\rangle$	$\langle 17^+\rangle$	$\langle 15^+\rangle$	$\langle 17^+\rangle$	$\langle 15^-\rangle$	$\langle 21^+\rangle$	$\langle 19^-\rangle$	$\langle 19^+\rangle$
2326.9	$\langle 17^+\rangle$		56	44								
2481.2	$\langle 15^-\rangle$				100							
3236.7	$\langle 21^+\rangle$					100						
3426.6	$\langle 19^-\rangle$								100			
3452	$\langle 19^+\rangle$						71	29				
3635.1	$\langle 21^+\rangle$							100				
4300.9										100		
4497	$\langle 23^+\rangle$											62
4504.1											100	

Energy levels and branching ratios [93Bh02]. Part 3

$^{71}_{34}$Se

E^*	$2J^\pi$	Branching ratios in percentage		
		E_f^*:	3635.1	4834.3
[keV]		$2J_f^\pi$:	$\langle 21^+ \rangle$	$\langle 25^+ \rangle$
4497	$\langle 23^+ \rangle$		38	
4834.3	$\langle 25^+ \rangle$		100	
6035.3				100

Energy levels and branching ratios [89Ki02].

$^{72}_{34}$Se

E^*	J^π	L	$T_{1/2}$ or	Ref.	Branching ratios in percentage				
					E_f^*:	0	862	937	1317	1637
[keV]		(p,t)	Γ_{cm}		J_f^π:	0^+	2^+	0^+	2^+	4^+
0	0^+	0	8.40(8) d	77OrZW						
862.08(9)	2^+	2	3.0(3) ps	77OrZW		100				
937.22(15)	0^+	0	17.5(17) ns	77OrZW		x	x			
1316.68(8)	2^+		10.0(10) ps			47(3)	36(2)	17(1)		
1636.86(13)	4^+		2.2(3) ps				100			
1876.20(18)	$\langle 2,4 \rangle$						21(11)		79(5)	
1998.94(13)	2^+						56(6)	44(4)		
2150.3(9)	$\langle 2^+ \rangle$					19(6)			40(16)	40(16)
2293.69(11)	$\langle 2 \rangle$		<1.0 ps				47(2)		53(4)	
2371.51(22)						48(5)	21(3)	6(2)	24(4)	
2405.73(21)	3^-	3	<1.0 ps	77OrZW					100	
2433.76(10)	3^-		<1.0 ps			21(4)	63(3)		15.8(12)	
2466.77(16)	6^+		1.6(2) ps							100
2586.42(16)	$\langle 3 \rangle$						58(5)		14(7)	
2843	5^-	5		77OrZW						
2929	3^-	3		77OrZW						
2965.2(5)									[100]	
3124.09(21)	$\langle 4^+ \rangle$	4		77OrZW					16(3)	
3173.19(12)	5^-		<1.0 ps							85(3)
3213.50(17)	$\langle 2^+ – 4^+ \rangle$									40(8)
3226.2(3)	$\langle 2 – 4^+ \rangle$								29(8)	
3232.09(14)										52(8)
3239.5(10)										
3349.91(14)	5^-	$\langle 5 \rangle$	<1.0 ps	77OrZW						90(6)
3382.6(4)										
3424.8(3)	8^+		0.54(5) ps							
3450	2^+	2		77OrZW						
3521.95(14)	6^-		2.9(3) ps							
3762	4^+	4		77OrZW						
3769.99(15)	7^-		2.8(2) ps							
3917.25(15)	7^-		1.2(3) ps							
4092.8(3)										
4217.7(3)										

(continued) **$^{72}_{34}$Se**

E^* [keV]	J^π	L (p,t)	$T_{1/2}$ or Γ_{cm}	Ref.	Branching ratios in percentage					
					E_f^*:	0	862	937	1317	1637
					J_f^π:	0^+	2^+	0^+	2^+	4^+
4310	6^+	6		77OrZW						
4325.7(5)										
4504.3(3)	10^+		0.22(2) ps							
4713.20(25)										
4762.83(20)	$\langle 9^- \rangle$									
5709.7(4)	12^+		0.13(2) ps							
5830.8(9)	$\langle 11^- \rangle$									
6686.5(9)	$\langle 11^- \rangle$									
7038.1(6)	14^+		0.06(2) ps							
7041.9(12)	$\langle 13^- \rangle$									
7190.7(10)	$\langle 12^- \rangle$									
7795.7(14)	$\langle 13^- \rangle$									
8089.7(12)	$\langle 14^- \rangle$									
8495.1(12)	16^+		<0.3 ps							
10095.1(16)	18^+		<0.3 ps							
11832.2(19)	20^+		<0.3 ps							
13742.2(21)	22^+		<0.3 ps							
15896.2(24)	24^+		<0.3 ps							
18216(3)	$\langle 26^+ \rangle$		<0.3 ps							
20798(3)	$\langle 28^+ \rangle$		<0.3 ps							

Additional data on this isotope can be found in [01Pa53, 91Ch50, 91Ch14].

Energy levels and branching ratios [89Ki02]. Part 2 **$^{72}_{34}$Se**

E^* [keV]	J^π	Branching ratios in percentage									
	E_f^*:	1876	1999	2150	2293.69	2371.51	2405.73	2433.76	2466.77	2586.42	3173.19
	J_f^π:	$\langle 2,4 \rangle$	2^+	$\langle 2^+ \rangle$	$\langle 2 \rangle$		3^-	3^-	6^+	$\langle 3 \rangle$	5^-
2586.42(16)	$\langle 3 \rangle$	27(6)									
3124.09(21)	$\langle 4^+ \rangle$		47(5)			26(4)				11(4)	
3173.19(12)	5^-				≤11			15(3)			
3213.50(17)	$\langle 2^+–4^+ \rangle$				16(4)		44(8)				
3226.2(3)	$\langle 2–4^+ \rangle$	49(9)	23(9)								
3232.09(14)								48(4)			
3239.5(10)				100							
3349.91(14)	5^-							10.4(21)			
3382.6(4)					100						
3424.8(3)	8^+								100		
3521.95(14)	6^-										69(2)
3769.99(15)	7^-								72(2)		28(2)
3917.25(15)	7^-								44(12)		56(5)
4217.7(3)									100		

Energy levels and branching ratios [89Ki02]. Part 3 **$^{72}_{34}$Se**

E^*	J^π					Branching ratios in percentage						
		E_f^*:	3213.50	3349.91	3424.8	3521.95	3769.99	3917.25	4504.3	4762.83	5709.7	5830.8
[keV]		J_f^π:		5^-	8^+	6^-	7^-	7^-	10^+	$\langle 9^- \rangle$	12^+	$\langle 11^- \rangle$
3521.95(14)	6^-			31(2)								
3769.99(15)	7^-					x						
4092.8(3)			100									
4325.7(5)							100					
4504.3(3)	10^+				100							
4713.20(25)							100					
4762.83(20)	$\langle 9^- \rangle$				x		28(9)	72(9)				
5709.7(4)	12^+								100			
5830.8(9)	$\langle 11^- \rangle$									100		
6686.5(9)	$\langle 11^- \rangle$									100		
7038.1(6)	14^+										100	
7041.9(12)	$\langle 13^- \rangle$											100
7190.7(10)	$\langle 12^- \rangle$											x

Energy levels and branching ratios [89Ki02]. Part 4 **$^{72}_{34}$Se**

E^*	J^π					Branching ratios in percentage						
		E_f^*:	6686.5	7038.1	7041.9	7190.7	8495.1	10095.1	11832.2	13742.2	15896.2	18216
[keV]		J_f^π:	$\langle 11^- \rangle$	14^+	$\langle 13^- \rangle$	$\langle 12^- \rangle$	16^+	18^+	20^+	22^+	24^+	$\langle 26^+ \rangle$
7190.7(10)	$\langle 12^- \rangle$		x									
7795.7(14)	$\langle 13^- \rangle$					100						
8089.7(12)	$\langle 14^- \rangle$				x	x						
8495.1(12)	16^+			100								
10095.1(16)	18^+						100					
11832.2(19)	20^+							100				
13742.2(21)	22^+								100			
15896.2(24)	24^+									100		
18216(3)	$\langle 26^+ \rangle$										100	
20798(3)	$\langle 28^+ \rangle$											100

Energy levels and branching ratios [04Si08]. **$^{73}_{34}$Se**

E^*	$2J^\pi$	$T_{1/2}$ or				Branching ratios in percentage					
			E_f^*:	0	25.7	26.3	90.6	151.2	192.4	295.4
[keV]		Γ_{cm}	$2J_f^\pi$:	9^+	3^-	$\langle 3^- \rangle$	$\langle 1,3 \rangle^-$	5^-	$\langle 5^+ \rangle$	7^+
0	9^+	7.15(8) h								
25.71(4)	3^-	39.8(13) m		100						
26.30(12)	$\langle 3^- \rangle$				x					
90.60(6)	$\langle 1,3 \rangle^-$				100					

(continued) **$^{73}_{34}$Se**

E^*	$2J^\pi$	$T_{1/2}$ or		Branching ratios in percentage						
			E_f^*:	0	25.7	26.3	90.6	151.2	192.4	295.4
[keV]		Γ_{cm}	$2J_f^\pi$:	9^+	3^-	$\langle 3^- \rangle$	$\langle 1,3 \rangle^-$	5^-	$\langle 5^+ \rangle$	7^+
151.25(5)	5^-	222(33) ps			100					
192.40(8)	$\langle 5^+ \rangle$	0.97(21) ns		18(2)		82(4)				
295.41(8)	7^+			98(5)					≈1.8	
400.22(7)	$\langle 5^- \rangle$				87(9)			13.0(15)		
426.52(7)	$\langle 1^-,3^- \rangle$				31(1)		55(2)	14.2(11)		
505.47(7)	7^-	4.7(5) ps			25(1)			72(3)		
565.71(13)	$\langle 1,3 \rangle$				100					
574.76(10)	$\langle 5^+ \rangle$								38(6)	62(6)
639.26(12)	9^+			≈79					8.6(11)	12.7(11)
640.99(7)	$\langle 1^-,3 \rangle$				55(3)		18(10)	27(4)		
644.81(22)									100	
684.90(20)	$\langle 5^- \rangle$					100				
724.61(11)	$\langle 7^+ \rangle$			≈39					48(2)	12(1)
790.38(6)	$\langle 1^-,3^- \rangle$				6(4)		72(2)	8(1)		
790.72(16)	5^-				≈40			≈60		
804.76(10)	9^-	2.50(14) ps						56.3(9)		
940.09(7)	$\langle 1^-,3^- \rangle$				43(1)		49(2)	7(5)		
942.89(13)	11^+	0.97(21) ps		88(10)						
971.29(15)	13^+	0.88(7) ps		100						
999.33(14)	11^+			≈14						86(6)
1021.96(7)	$\langle 1^-,3^- \rangle$				21(2)		65(3)	14(1)		
1091.7(2)										
1091.8(2)	$\langle 9 \rangle$									100
1179.6(2)	11^-	1.52(14) ps								
1230.1(2)	$\langle 9^- \rangle$									
1295.0(4)										100
1356.3(2)	9^-									
1550.7(1)	$\langle 1,3 \rangle$						76(7)			
1552.4(2)	13^-	1.08(14) ps								
1564.5(2)										
1564.6(2)	$\langle 11 \rangle$									
1573.0(2)	13^+	1.3(4) ps								
1619.4(3)	$\langle 1,3 \rangle$						100			
1698.5(5)										
1863.0(2)	15^+	0.14(7) ps								
1883.1(4)	$\langle 11^- \rangle$									
1932.7(4)		1.7(4) ps								
2002.4(2)	15^-	0.49(14) ps								
2009.6(2)	$\langle 13^- \rangle$									
2014.7(3)	17^+	0.18(4) ps								
2041.4(4)	$\langle 13^+ \rangle$									
2089.9(2)	13^-									
2210.1(2)	$\langle 15^+ \rangle$	0.76(21) ps								
2267.6(4)										
2432.7(2)	17^-	0.44(8) ps								

(continued) **$^{73}_{34}$Se**

E^*	$2J^\pi$	$T_{1/2}$ or	Branching ratios in percentage							
			E_f^*:	0	25.7	26.3	90.6	151.2	192.4	295.4
[keV]		Γ_{cm}	$2J_f^\pi$:	9^+	3^-	$\langle 3^- \rangle$	$\langle 1,3 \rangle^-$	5^-	$\langle 5^+ \rangle$	7^+
2485.6(4)										
2626.4(5)										
2638.9(3)	$\langle 17^+ \rangle$	0.45(14) ps								
2868.4(5)	$\langle 17^- \rangle$									
2872.5(4)	$\langle 19^+ \rangle$	0.56(14) ps								
2949.9(2)	$\langle 19^- \rangle$	0.20(6) ps								
3003.8(2)	$\langle 17^- \rangle$	0.76(21) ps								
3097.9(3)	19^-	1.8(6) ps								
3171.8(4)	$\langle 21^+ \rangle$	0.139(35) ps								
3203.5(5)		0.28(14) ps								
3303.6(5)		0.42(14) ps								
3440.3(3)	$\langle 21^- \rangle$	0.125(21) ps								
3834.4(11)	$\langle 21^- \rangle$									
3854.4(6)										
3913.9(5)	$\langle 23^+ \rangle$									
4012.2(4)	$\langle 23^- \rangle$	0.10(1) ps								
4386.8(5)	$\langle 25^+ \rangle$	0.06(2) ps								
4589.6(4)	$\langle 25^- \rangle$	0.06(2) ps								
4944.5(15)	$\langle 25^- \rangle$									
4952.3(5)	$\langle 27^+ \rangle$									
5219.6(7)	$\langle 27^- \rangle$	0.07(1) ps								
5636.9(5)	$\langle 29^+ \rangle$	0.12(1) ps								
5853.4(8)	$\langle 29^- \rangle$	0.06(1) ps								
5890.8(11)										
6526.9(10)	$\langle 31^- \rangle$	0.07(1) ps								
7015.0(6)	$\langle 33^+ \rangle$	$\leq$0.097 ps								
7232.7(11)	$\langle 33^- \rangle$	$\leq$0.15 ps								
7954.9(14)	$\langle 35^- \rangle$	$\leq$0.26 ps								
8531.0(12)	$\langle 37^+ \rangle$									
8754.7(15)	$\langle 37^- \rangle$									
9532.9(17)	$\langle 39^- \rangle$									
10215(2)	$\langle 41^+ \rangle$									
10468(2)	$\langle 41^- \rangle$									

Additional data on this isotope can be found in [99Lo17, 91Se11, 91Ka16, 90Se06].

Energy levels and branching ratios [04Si08]. Part 2 **$^{73}_{34}$Se**

E^*	$2J^\pi$		Branching ratios in percentage									
		E_f^*:	400.2	426.5	505.5	565.7	639.3	684.9	724.6	790.7	804.8	942.9
[keV]		$2J_f^\pi$:	$\langle 5^- \rangle$	$\langle 1^-,3^- \rangle$	7^-	$\langle 1,3 \rangle$	9^+	$\langle 5^- \rangle$	$\langle 7^+ \rangle$	5^-	9^-	11^+
505.47(7)	7^-		$\approx$2.6									
790.38(6)	$\langle 1^-,3^- \rangle$		7(6)	7(1)								

(continued) **$^{73}_{34}$Se**

E^*	$2J^\pi$		Branching ratios in percentage									
		E_f^*:	400.2	426.5	505.5	565.7	639.3	684.9	724.6	790.7	804.8	942.9
[keV]		$2J_f^\pi$:	$\langle 5^- \rangle$	$\langle 1^-,3^- \rangle$	7^-	$\langle 1,3 \rangle$	9^+	$\langle 5^- \rangle$	$\langle 7^+ \rangle$	5^-	9^-	11^+
804.76(10)	9^-		2.5(5)		41(2)							
940.09(7)	$\langle 1^-,3^- \rangle$		<16									
942.89(13)	11^+						12(1)					
999.33(14)	11^+						≤1					
1021.96(7)	$\langle 1^-,3^- \rangle$			<6								
1091.7(2)							100					
1179.6(2)	11^-				68(1)						32(1)	
1230.1(2)	$\langle 9^- \rangle$		≈29		≈59			12(1)				
1356.3(2)	9^-				46(11)					31(3)	23(1)	
1550.7(1)	$\langle 1,3 \rangle$					24(10)						
1552.4(2)	13^-										69.9(14)	
1564.5(2)							84(8)		16(3)			
1573.0(2)	13^+						≈27					9(1)
1698.5(5)									100			
1863.0(2)	15^+											19(1)
1883.1(4)	$\langle 11^- \rangle$										100	
2041.4(4)	$\langle 13^+ \rangle$											100
2210.1(2)	$\langle 15^+ \rangle$											34(9)
2267.6(4)												100

Energy levels and branching ratios [04Si08]. Part 3 **$^{73}_{34}$Se**

E^*	$2J^\pi$		Branching ratios in percentage									
		E_f^*:	971.3	999.3	1091.8	1179.6	1230.1	1356.3	1552.4	1564.5	1573.0	1863.0
[keV]		$2J_f^\pi$:	13^+	11^+	$\langle 9 \rangle$	11^-	$\langle 9^- \rangle$	9^-	13^-		13^+	15^+
1552.4(2)	13^-					30(2)						
1564.6(2)	$\langle 11 \rangle$				100							
1573.0(2)	13^+		23(6)	40(7)								
1863.0(2)	15^+		47(12)	30(6)							5(2)	
1932.7(4)			100									
2002.4(2)	15^-					71(4)			29(3)			
2009.6(2)	$\langle 13^- \rangle$					≈24	76(11)					
2014.7(3)	17^+		100									
2089.9(2)	13^-					≈30		54(3)	≈15			
2210.1(2)	$\langle 15^+ \rangle$		23(4)	43(9)								
2432.7(2)	17^-								83(7)			
2485.6(4)									100			
2626.4(5)										100		
2638.9(3)	$\langle 17^+ \rangle$										77(25)	
2872.5(4)	$\langle 19^+ \rangle$											80(20)

Energy levels and branching ratios [04Si08]. Part 4 **$^{73}_{34}$Se**

E^*	$2J^\pi$		Branching ratios in percentage									
		E_f^*:	2002.4	2009.6	2014.7	2089.9	2432.7	2868.4	2872.5	2949.9	3171.8	3440.3
[keV]		$2J_f^\pi$:	15^-	$\langle 13^- \rangle$	17^+	13^-	17^-	$\langle 17^- \rangle$	$\langle 19^+ \rangle$	$\langle 19^- \rangle$	$\langle 21^+ \rangle$	$\langle 21^- \rangle$
2432.7(2)	17^-		17(5)									
2638.9(3)	$\langle 17^+ \rangle$				23(5)							
2868.4(5)	$\langle 17^- \rangle$			100								
2872.5(4)	$\langle 19^+ \rangle$				≈20							
2949.9(2)	$\langle 19^- \rangle$		67(5)				33(3)					
3003.8(2)	$\langle 17^- \rangle$		≈65			x	35(6)					
3097.9(3)	19^-		65(10)				35(5)					
3171.8(4)	$\langle 21^+ \rangle$				100				x			
3203.5(5)					100							
3303.6(5)					100							
3440.3(3)	$\langle 21^- \rangle$						81(8)			19(2)		
3834.4(11)	$\langle 21^- \rangle$							100				
3854.4(6)								100				
3913.9(5)	$\langle 23^+ \rangle$								50		50	
4012.2(4)	$\langle 23^- \rangle$									61(10)		39(3)
4386.8(5)	$\langle 25^+ \rangle$										90	
4589.6(4)	$\langle 25^- \rangle$											66(12)

Energy levels and branching ratios [04Si08]. Part 5 **$^{73}_{34}$Se**

E^*	$2J^\pi$		Branching ratios in percentage									
		E_f^*:	3834.4	3913.9	4012.2	4386.8	4589.6	4952.3	5219.6	5636.9	5853.4	6526.9
[keV]		$2J_f^\pi$:	$\langle 21^- \rangle$	$\langle 23^+ \rangle$	$\langle 23^- \rangle$	$\langle 25^+ \rangle$	$\langle 25^- \rangle$	$\langle 27^+ \rangle$	$\langle 27^- \rangle$	$\langle 29^+ \rangle$	$\langle 29^- \rangle$	$\langle 31^- \rangle$
4386.8(5)	$\langle 25^+ \rangle$			10								
4589.6(4)	$\langle 25^- \rangle$				34(18)							
4944.5(15)	$\langle 25^- \rangle$		100									
4952.3(5)	$\langle 27^+ \rangle$			60		40						
5219.6(7)	$\langle 27^- \rangle$				80		20					
5636.9(5)	$\langle 29^+ \rangle$					85		15				
5853.4(8)	$\langle 29^- \rangle$						72		28			
5890.8(11)						100						
6526.9(10)	$\langle 31^- \rangle$								75		25	
7015.0(6)	$\langle 33^+ \rangle$									100		
7232.7(11)	$\langle 33^- \rangle$										78	22
7954.9(14)	$\langle 35^- \rangle$											100

Energy levels and branching ratios [04Si08]. Part 6 **$^{73}_{34}$Se**

E^*	$2J^\pi$			Branching ratios in percentage			
		E_f^*:	7015.0	7232.7	7954.9	8531.0	8754.7
[keV]		$2J_f^\pi$:	$\langle 33^+ \rangle$	$\langle 33^- \rangle$	$\langle 35^- \rangle$	$\langle 37^+ \rangle$	$\langle 37^- \rangle$
8531.0(12)	$\langle 37^+ \rangle$		100				
8754.7(15)	$\langle 37^- \rangle$			100			
9532.9(17)	$\langle 39^- \rangle$				100		
10215(2)	$\langle 41^+ \rangle$					100	
10468(2)	$\langle 41^- \rangle$						100

Energy levels and branching ratios [95Fa23]. **$^{74}_{34}$Se**

E^*	J^π	L	β_L	$\beta_L R$	$T_{1/2}$ or	Ref.	Branching ratios in percentage				
							E_f^*:	0.0	635	853	1269	1363
[keV]			(p,p′)	(p,p′)	Γ_{cm}		J_f^π:	0^+	2^+	0^+	2^+	4^+
0.0	0^+				Stable							
634.75(7)	2^+	2	0.26(4)	1.38(14)	7.08(9) ps	86Og01		100				
853.83(9)	0^+	0			0.75(5) ns				100			
1269.02(7)	2^+	2		0.23(3)	4.0(11) ps	86Og01		34(1)	66(5)			
1363.22(8)	4^+	4	0.02(1)	0.09(1)	1.86(8) ps	83Ma59			100			
1657.48(11)	$\langle 0^+ \rangle$								100			
1838.68(10)	$\langle 2^+ \rangle$								17(9)	83(5)		
1884.27(9)	3^+				1.5(6) ps				46(3)		49(4)	5(1)
2107.99(9)	4^+				1.9(7) ps				17(3)		66(3)	17(3)
2146(25)												
2231.45(11)	6^+				0.9(2) ps							100
2314.09(10)	$\langle 2^+ \rangle$								32(6)	46(3)	22(2)	
2349.63(11)	3^-	3		0.77(8)	23(3) ps	86Og01			37(4)		25(3)	37(1)
2378.60(12)	$\langle 1,2^+ \rangle$							14(5)	49(14)	14(3)	24(3)	
2482(25)	$\langle 2^+ \rangle$											
2563.44(9)	$\langle 2^+,3,4^+ \rangle$								8(2)		23(2)	54(2)
2661.93(12)	$\langle 5^+ \rangle$				1.7(6) ps							24(4)
2718(10)	0^+											
2818.46(16)	$\langle 2^+,3,4^+ \rangle$											80(12)
2831.54(16)	$\langle 4^- \rangle$				10(3) ps							100
2842.66(11)	5^-				7.3(8) ps							16(1)
2844(2)	3^-	3		0.43(5)		86Og01						
2903(2)	4^+	4		0.23(3)		86Og01						
2918(25)	$\langle 0^+ \rangle$											
2918.45(16)	$\langle 2^+,3,4^+ \rangle$								68(4)		11(2)	9(1)
2986.68(14)	$\langle 5,6^+ \rangle$											
3002(4)												
3037.3(4)	$\langle 2^+ \rangle$									100		
3078.05(14)	$\langle 4 \rangle^+$	4		0.14(2)		86Og01			5.4(13)			90(9)
3112.32(23)	$\langle 2^+,3,4^+ \rangle$								<19		21(17)	
3198.42(15)	8^+				0.42(4) ps							

(continued) **$^{74}_{34}$Se**

E^* [keV]	J^π	L	β_L (p,p′)	$\beta_L R$ (p,p′)	$T_{1/2}$ or Γ_{cm}	Ref.	Branching ratios in percentage				
							E_f^*:	0.0	635	853	1269	1363
							J_f^π:	0^+	2^+	0^+	2^+	4^+
3200.8(4)	⟨2–6⟩											100
3250.12(12)	⟨1,2^+⟩							33(2)	40(1)	15(1)	7	
3250.88(22)	⟨2–5⟩											
3253.3(4)	⟨2–6⟩	4		0.42(5)		86Og01						100
3306.0(3)	⟨2–6⟩											
3379.4(3)	⟨2^+⟩								48(12)			
3382.61(14)	⟨6^-⟩				4.9(17) ps							
3516.04(16)	7^-				3.5(3) ps							
3524.95(21)	⟨7^+⟩				0.72(23) ps							
3529(4)	5^-	5				86Og01						
3538(25)	⟨6^+⟩											
3539.76(11)	⟨1,2^+⟩							8(2)	20(2)	3(2)	20(4)	
3580.3(3)	⟨2^+⟩	⟨2⟩		0.08(1)		86Og01			<60			100
3602(4)	5^-	5				86Og01						
3624.48(16)	⟨2^+⟩							60(2)	4(1)	22(1)	8(1)	
3674.78(22)	⟨2^+,3,4^+⟩								<29			91(13)
3733.64(17)	⟨1,2^+⟩							49(3)	12(3)	12(3)	26(3)	
3749(4)	⟨4^+⟩	4		0.11(1)		86Og01						
3771.94(17)	⟨4^+⟩	4		0.15(2)		86Og01			29(4)		8(2)	42(17)
3788.29(12)	⟨1,2^+⟩							35(2)		7(1)	5(1)	
3841.88(22)	⟨7^-⟩											
3845(4)	3^-	3		0.22(3)		86Og01						
3928.65(25)	⟨2–6⟩											
3930.64(18)	⟨0^+,1⟩								35(2)		65(4)	
3972.90(17)	⟨2^+⟩							35(2)	7(2)	13(2)	23(2)	
3980(4)	⟨6^+⟩	⟨6⟩				86Og01						
4005(4)	2^+	⟨2⟩				86Og01						
4044.37(25)	⟨1,2^+⟩							32(5)	15(5)	36(5)		
4094.45(20)	⟨2^+⟩							12(3)	27(3)	15(3)		
4118(4)												
4198.22(22)	⟨8^-⟩				1.4(3) ps							
4224(4)												
4256.32(18)	10^+				0.28(4) ps							
4266.7(4)	⟨1,2^+⟩							30(6)	70(6)			
4279(4)	4^+	4		0.14(2)		86Og01						
4309.19(19)	⟨3,4^+⟩											<47
4342.5(4)	⟨2^+⟩	⟨2⟩				86Og01		78(11)		22(8)		
4362(4)												
4379.9(3)	⟨1,2^+⟩							68(4)	10(2)	10(2)	5(2)	
4403.29(21)	9^-				0.58(6) ps							
4441.70(21)	⟨3,4^+⟩								36(6)		36(6)	
4449.52(23)	⟨9^+⟩				0.58(9) ps							
4487.2(3)	⟨1,2^+⟩							13(9)	87(9)			
4496.32(18)	⟨3,4^+⟩								55(10)		<31	
4516.24(18)	⟨3,4^+⟩								32(3)		<17	38(7)

(continued) **$^{74}_{34}$Se**

E^* [keV]	J^π	L	β_L (p,p′)	$\beta_L R$ (p,p′)	$T_{1/2}$ or Γ_{cm}	Ref.	Branching ratios in percentage E_f^*: / J_f^π:	0.0 0^+	635 2^+	853 0^+	1269 2^+	1363 4^+
4536.50(24)	⟨1,2⁺⟩							5(3)	60(5)		21(5)	
4580.0(3)	⟨3,4,5⟩											
4586.19(20)	⟨3,4⁺⟩								44(7)			
4592.11(16)	⟨4⁺⟩	4		0.10(1)		86Og01			71(9)		11(2)	<16
4661.95(20)	⟨3,4⁺⟩								38(6)		<19	47(9)
4677(4)	3⁻	3		0.17(2)		86Og01						
4699.6(3)	⟨3,4⁺⟩								14(4)			86(13)
4757.2(4)	⟨3,4⁺⟩	⟨3⟩				86Og01			100			<83
4794.47(21)	⟨3,4,5⟩											76(11)
5146(4)	⟨3⁻⟩	3		0.10(1)		86Og01						
5209.2(5)	⟨10⁻⟩				0.9(3) ps							
5426(4)	⟨3⁻⟩	3		0.18(2)		86Og01						
5443.0(5)	12⁺				0.140(25) ps							
5491.1(6)	11⁻				0.23(3) ps							
5492.1(3)	⟨11⁺⟩											
6254.0(7)	⟨12⁻⟩											
6681.6(8)	⟨14⁺⟩											
6685.5(8)	13⁻				0.22(10) ps							
6735.3(10)	14⁺				0.148(14) ps							
7452.3(10)	⟨14⁻⟩											
7976.7(12)	⟨15⁻⟩											
8115.8(15)	16⁺				0.12(3) ps							
9679.7(20)	⟨18⁺⟩											
11358.3(25)	⟨20⁺⟩											
13120(3)	⟨22⁺⟩											
14921(4)	⟨24⁺⟩											
			83Ma59	86Og01		Ref.						

Additional data on this isotope can be found in [01Th14, 01Pa53, 99Lo17, 90Co21, 86Og01 83Ma59].
Abundance: 0.89(4) %.

Energy levels and branching ratios [95Fa23]. Part 2 **$^{74}_{34}$Se**

E^* [keV]	J^π	Branching ratios in percentage E_f^*: / J_f^π:	1657 $\langle 0^+ \rangle$	1839 $\langle 2^+ \rangle$	1884 3^+	2107.99 4^+	2231.45 6^+	2314.09 $\langle 2^+ \rangle$	2349.63 3^-	2378.60 $\langle 1,2^+ \rangle$	2563.44	2661.93 $\langle 5^+ \rangle$
2563.44(9)	⟨2⁺,3,4⁺⟩			6(3)	9(5)							
2661.93(12)	⟨5⁺⟩				76(5)							
2818.46(16)	⟨2⁺,3,4⁺⟩			20(4)								
2842.66(11)	5⁻					31(1)	12(2)		41(2)			
2918.45(16)	⟨2⁺,3,4⁺⟩			13(3)								
2986.68(14)	⟨5,6⁺⟩					100						

(continued) **$^{74}_{34}$Se**

E^*	J^π	Branching ratios in percentage									
	E_f^*:	1657	1839	1884	2107.99	2231.45	2314.09	2349.63	2378.60	2563.44	2661.93
[keV]	J_f^π:	$\langle 0^+ \rangle$	$\langle 2^+ \rangle$	3^+	4^+	6^+	$\langle 2^+ \rangle$	3^-	$\langle 1,2^+ \rangle$		$\langle 5^+ \rangle$
3078.05(14)	$\langle 4 \rangle^+$			1.3(3)			3.3(7)				
3112.32(23)	$\langle 2^+,3,4^+ \rangle$						79(35)				
3198.42(15)	8^+					100					
3250.12(12)	$\langle 1,2^+ \rangle$						4(1)		1.4(7)		
3250.88(22)	$\langle 2–5 \rangle$			100							
3306.0(3)	$\langle 2–6 \rangle$			64(9)	36(9)						
3379.4(3)	$\langle 2^+ \rangle$			52(7)							
3382.61(14)	$\langle 6^- \rangle$					21(4)					28(4)
3516.04(16)	7^-					15(2)					
3524.95(21)	$\langle 7^+ \rangle$					29(5)					71(3)
3539.76(11)	$\langle 1,2^+ \rangle$	20(2)	9(2)				17(2)		2(1)		
3624.48(16)	$\langle 2^+ \rangle$						5(1)				
3674.78(22)	$\langle 2^+,3,4^+ \rangle$				9(2)						
3771.94(17)	$\langle 4^+ \rangle$		21(4)								
3788.29(12)	$\langle 1,2^+ \rangle$	25(1)	13(1)				10(1)		6(1)		
3972.90(17)	$\langle 2^+ \rangle$			22(5)							
4044.37(25)	$\langle 1,2^+ \rangle$	17(5)									
4094.45(20)	$\langle 2^+ \rangle$	16(3)							30(4)		
4309.19(19)	$\langle 3,4^+ \rangle$						[78]			[22]	
4379.9(3)	$\langle 1,2^+ \rangle$		5(2)								
4441.70(21)	$\langle 3,4^+ \rangle$				27(3)						
4496.32(18)	$\langle 3,4^+ \rangle$				45(7)						
4516.24(18)	$\langle 3,4^+ \rangle$									12(2)	17(3)
4536.50(24)	$\langle 1,2^+ \rangle$								14(5)		
4580.0(3)	$\langle 3,4,5 \rangle$			50(6)	50(6)						
4586.19(20)	$\langle 3,4^+ \rangle$			48(7)	<18						
4592.11(16)	$\langle 4^+ \rangle$			11(2)	7(2)					<9	
4661.95(20)	$\langle 3,4^+ \rangle$		x							15(3)	

Energy levels and branching ratios [95Fa23]. Part 3 **$^{74}_{34}$Se**

E^*	J^π	Branching ratios in percentage									
	E_f^*:	2831.54	2842.66	3078.05	3198.42	3382.61	3516.04	3524.95	3771.94	4198.22	4256.32
[keV]	J_f^π:	$\langle 4^- \rangle$	5^-	$\langle 4 \rangle^+$	8^+	$\langle 6^- \rangle$	7^-	$\langle 7^+ \rangle$	$\langle 4^+ \rangle$	$\langle 8^- \rangle$	10^+
3382.61(14)	$\langle 6^- \rangle$	19(4)	33(4)								
3516.04(16)	7^-		85(3)								
3841.88(22)	$\langle 7^- \rangle$						100				
3928.65(25)	$\langle 2–6 \rangle$			100							
4198.22(22)	$\langle 8^- \rangle$					78(4)	22(5)				
4256.32(18)	10^+				100						
4403.29(21)	9^-						100				
4449.52(23)	$\langle 9^+ \rangle$				24(7)			76(5)			

(continued) **$^{74}_{34}$Se**

E^*	J^π	Branching ratios in percentage									
	E_f^*:	2831.54	2842.66	3078.05	3198.42	3382.61	3516.04	3524.95	3771.94	4198.22	4256.32
[keV]	J_f^π:	$\langle 4^- \rangle$	5^-	$\langle 4 \rangle^+$	8^+	$\langle 6^- \rangle$	7^-	$\langle 7^+ \rangle$	$\langle 4^+ \rangle$	$\langle 8^- \rangle$	10^+
4586.19(20)	$\langle 3,4^+ \rangle$			9(2)							
4794.47(21)	$\langle 3,4,5 \rangle$								24(3)		
5209.2(5)	$\langle 10^- \rangle$									100	
5443.0(5)	12^+										100
5492.1(3)	$\langle 11^+ \rangle$										4(2)

Energy levels and branching ratios [95Fa23]. Part 4 **$^{74}_{34}$Se**

E^*	J^π	Branching ratios in percentage									
	E_f^*:	4403.29	4449.52	5209.2	5443.0	5492.1	6254.0	6685.5	6735.3	8115.8	9679.7
[keV]	J_f^π:	9^-	$\langle 9^+ \rangle$	$\langle 10^- \rangle$	12^+	$\langle 11^+ \rangle$	$\langle 12^- \rangle$	13^-	14^+	16^+	$\langle 18^+ \rangle$
5491.1(6)	11^-	100									
5492.1(3)	$\langle 11^+ \rangle$	81(7)	15(2)								
6254.0(7)	$\langle 12^- \rangle$			100							
6681.6(8)	$\langle 14^+ \rangle$					100					
6685.5(8)	13^-					100					
6735.3(10)	14^+				100						
7452.3(10)	$\langle 14^- \rangle$						100				
7976.7(12)	$\langle 15^- \rangle$							100			
8115.8(15)	16^+								100		
9679.7(20)	$\langle 18^+ \rangle$									100	
11358.3(25)	$\langle 20^+ \rangle$										100

Energy levels and branching ratios [95Fa23]. Part 5 **$^{74}_{34}$Se**

E^*	J^π	Branching ratios in percentage		
		E_f^*:	11358.3	13120
[keV]		J_f^π:	$\langle 20^+ \rangle$	$\langle 22^+ \rangle$
13120(3)	$\langle 22^+ \rangle$		100	
14921(4)	$\langle 24^+ \rangle$			100

Energy levels and branching ratios [99Fa05]. **$^{75}_{34}$Se**

E^*	$2J^\pi$	L	S'	L	$S_{\ell j}$	L	$(2J+1)S$	$T_{1/2}$ or	Ref.	Branching ratios in percentage				
										E_f^*:	0.0	112	133	287	293
[keV]			(d,p)		(p,d)		(d,t)	Γ_{cm}		$2J_f^\pi$:	5^+	7^+	9^+	3^-	1^-
0.0	5^+	2	0.23	2	0.08	2	0.19(2)	119.78(1) d	78Sh06						
112.387(1)	7^+					⟨4⟩	0.08(3)	0.69(12) ns	73Sa39		100				
133.040(3)	9^+	4	6.5	4	2.72	4	3.8(5)	5.3(6) ns	78Sh06		88	12(4)			
286.570(2)	3^-			1	1.6	1	1.7(2)	1.29(15) ns	79Ba61		100		<0.1		
293.104(3)	1^-	1	1.5					30.0(4) ns	78Sh06					100	
427.884(2)	5^-	3	1.2	3	1.47	3	1.4(1)		78Sh06		39(1)	6.9(8)		54(2)	
585.949(2)	3^-	1	0.13	1	0.09	1	0.12(2)		78Sh06		5.0(2)			7.9(3)	87(3)
610.714(3)	1^+	0	0.10			0	0.02(1)		78Sh06		91(6)			0.2(1)	9.2(5)
628.430(2)	5^+	2	0.82	2	0.10	2	0.15(4)		78Sh06		19(4)	72(3)	6.5(4)	2.3(1)	
663.955(2)	5^-	3	0.70	3	0.6	3	0.33(4)		78Sh06		1.3(2)	4.5(4)		78(1)	0.3(1)
747.649(3)	7^-					1+4	0.005+0.1		73Sa39		8.0(4)	7.9(7)		21(1)	
762.44(20)													100		
777.321(3)	5^-			3	0.36	3	0.29(6)		73Sa39		2.0(3)			32(1)	28(3)
789.988(6)	$7^{\langle+\rangle}$										50(1)	39(2)	10(5)		
814.32(11)	11^+											26(6)	74(5)		
839.892(3)	3^+										74(2)	2.7(2)			
859.535(3)	3^-	1	0.11	1	0.10	1	0.08(1)		73Sa39		3.0(4)			33(1)	5.4(6)
895.273(3)	1^-,3^-	1	0.14	1	0.10	1	0.08(1)		73Sa39					80(2)	
934.10(9)	13^+												96(21)		
953.296(10)	5^+,7										47(5)	28(16)	16(5)		
962.642(3)	3^-	1	0.14	1	0.4	1	0.47(4)		73Sa39		36(1)			44(1)	5.0(3)
1003.84(1)	5^+	2	0.37			2	0.11(2)	0.05(2) ps	73Sa39		46(3)	51(2)	2.3(6)		
1020.47(1)	1^-,3^-					1	0.05(1)		73Sa39					97(3)	
1047.18(1)	5^-,7^-			3	0.44	3	0.16(5)	0.11(3) ps	73Sa39		24(3)			26(6)	
1066.39(20)												100			
1073.82(1)	5^-					3	0.21(4)	0.07(2) ps	73Sa39		8.1(8)	45(3)			12(1)
1078.69(7)	9^-											x	18(3)		
1087.12(17)												x	x		
1088.15(22)	⟨7⟩							0.2(1) ps			7.4(3)	93(3)			
1144.46(2)	3^+,5^+					2	0.006(2)	0.09(3) ps	73Sa39		97(3)	3.0(1)			
1162.3(3)	7^+,9^+					⟨4⟩	0.02(1)		73Sa39			100			
1181.85(18)	5^-,7^-			3	0.18				79Ba61						
1184.19(1)	1,3,5	⟨1⟩	0.15			⟨1⟩	0.02		78Sh06					67(3)	
1189.2(3)						[4]	0.08		73Sa39			x			
1198.53(1)	5^+							0.13(6) ps						61(2)	
1245.24(1)	3^-	1	0.15	1	0.03	1	0.019(5)	0.25(10) ps	73Sa39		20(2)			7(1)	62(2)
1259.93(24)								0.04(1) ps			20(1)				
1301.71(2)	5,7							0.14(5) ps			19(1)	30(3)			
1369(15)	7^+,9^+			⟨4⟩	0.1				79Ba61						
1374.51(2)	1,3,5														
1380.36(21)											100				
1406.69(20)	5^-.7^-			⟨3⟩	0.15				79Ba61						
1431.95(6)															
1433(5)	1^+	0	0.41						78Sh06						
1439.0(4)	$\langle 7^+\rangle$							0.037(8) ps			27(1)				

(continued) **$^{75}_{34}$Se**

E^* [keV]	$2J^\pi$	L (d,p)	S' (d,p)	L (p,d)	$S_{\ell j}$ (p,d)	L	$T_{1/2}$ or Γ_{cm}	Ref.	Branching ratios in percentage				
									E_f^*:	0.0	112	133	287	293
									$2J_f^\pi$:	5^+	7^+	9^+	3^-	1^-
1454.68(2)														
1456.63(22)	$\langle 5^- \rangle$						0.19(7) ps			11.6(4)				
1484(15)	$5^-,7^-$			3	0.22			79Ba61						
1487.57(9)	$\langle 11^- \rangle$											15(6)		
1491.45(13)	$\langle 7^+ \rangle$						0.10(3) ps			83(2)		4.5(2)		
1550.12(20)	$7^+,9^+$						0.064(17) ps			31(1)	41(2)			
1551(5)	$3^+,5^+$	2	0.39					78Sh06						
1560.89(1)	$\langle 5,7^- \rangle$						0.083(21) ps			4.6(8)	15(1)			
1589.53(1)	5^+	2	0.39	$\langle 2 \rangle$	0.02		0.05(1) ps	78Sh06		9.4(3)	10.7(4)	3.6(1)		
1603(5)	$\langle 3^+,5^+ \rangle$	$\langle 2 \rangle$	0.20					78Sh06						
1628.43(23)	$\langle 13^+ \rangle$											20(10)		
1652.67(15)	5^+	0+2	0.1+0.2				0.026(7) ps	78Sh06		38(1)				
1667.77(18)	$\langle 5^- \rangle$						0.037(12) ps						51(8)	
1673.37(8)	$\langle 1^-,3^- \rangle$			$\langle 1 \rangle$	0.07			79Ba61						100
1740.96(13)	$\langle 15^+ \rangle$						0.25(5) ps							
1764(10)	$\langle 5^-,7^- \rangle$			$\langle 3 \rangle$	0.17			79Ba61						
1784(5)	1^+	0	0.12					78Sh06						
1803.1(4)	$3^+,5^+$	2	0.18					78Sh06						
1811.4(10)	$1^-,3^-$			1	0.16			79Ba61		100				
1895.01(8)														
1905.19(10)	$\langle 13^- \rangle$													
1910.84(21)	$\langle 17^+ \rangle$						0.30(6) ps							
1912.3(20)	$\langle 1^-,3^- \rangle$			$\langle 1 \rangle$	0.1			79Ba61						
1943.38(10)														
1958.34(15)														
1986.07(8)	$1,3,5^+$													
2030.36(12)	$3^+,5^+$	2	0.33	[1+3]	0.04			78Sh06						
2072(10)														
2093(10)														
2119(10)														
2159(10)														
2166.73(10)	$1,3,5^+$													
2235(10)														
2242.09(16)		0+2	0.1+0.2					78Sh06						
2271.22(16)														
2297(10)				[1+3]	0.04			79Ba61						
2349(10)	$\langle 3^+,5^+ \rangle$	$\langle 2 \rangle$	0.08					78Sh06						
2391.07(13)	$\langle 15^- \rangle$													
2437(10)	$3^+,5^+$	2	0.15					78Sh06						
2456.43(7)	$3^+,5^+$	2	0.12					78Sh06						
2519(10)		0+2	0.1+0.1					78Sh06						
2565.39(7)	1^+	0	0.19					78Sh06						
2573(25)	$1^-,3^-$			1	0.06			79Ba61						
2595.77(25)	$\langle 17^+ \rangle$													
2597.82(9)	$1,3,5^+$													

(continued)

$^{75}_{34}$Se

E^* [keV]	$2J^\pi$	L	S' (d,p)	L	$S_{\ell j}$ (p,d)	L	$(2J+1)S$ (d,t)	$T_{1/2}$ or Γ_{cm}	Ref.	Branching ratios in percentage E_f^*: 0.0 112 133 287 293 $2J_f^\pi$: 5^+ 7^+ 9^+ 3^- 1^-
2631.81(9)	1^+	0	0.16						78Sh06	
2670(25)										
2713(10)	$3^+,5^+$	2	0.23						78Sh06	
2737.41(8)	$1,3,5^+$									
2766.03(23)	$\langle 19^+ \rangle$							0.18(3) ps		
2782.08(10)										
2824(10)	1^+	0	0.10						78Sh06	
2840.44(12)	$\langle 17^- \rangle$							0.43(20) ps		
2871.73(14)	$\langle 17^- \rangle$							0.48(21) ps		
2887.18(7)										
2932(10)										
2940.92(12)	$3^+,5^+$	2	0.08						78Sh06	
3018.5(3)	$\langle 21^+ \rangle$							0.23(6) ps		
3020(10)	$\langle 3^+,5^+ \rangle$	$\langle 2 \rangle$	0.17						78Sh06	
3101(10)	$3^+,5^+$	2	0.10						78Sh06	
3152.60(8)	$3^+,5^+$	2	0.23						78Sh06	
3170(10)	$3^+,5^+$	2	0.10						78Sh06	
3182.35(9)										
3210.43(15)										
3289.06(24)	$\langle 19^- \rangle$							0.62(19) ps		
3290(10)	1^+	0	0.09						78Sh06	
3305.94(15)	$\langle 19^- \rangle$									
3333.09(23)	$3^+,5^+$	2	0.24						78Sh06	
3340.14(25)										
3432.1(8)	$\langle 19^- \rangle$									
3457(10)										
3483(10)										
3619.36(15)	1^+	0	0.12						78Sh06	
3646.44(15)	$\langle 21^- \rangle$									
3746.4(3)	$\langle 23^+ \rangle$							0.17(3) ps		
3767(10)										
3884.7(20)	$\langle 21^- \rangle$									
3895(10)										
3917(10)	$3^+,5^+$	2	0.10						78Sh06	
4079(10)										
4130(10)										
4199.3(4)	$\langle 25^+ \rangle$							0.10(2) ps		
4255(10)										
4267.6(10)	$\langle 23^- \rangle$									
4296(10)										
4472.2(13)	$\langle 23^- \rangle$									
4601(10)										
4706.7(3)	$\langle 25^- \rangle$									
4726(10)	$3^+,5^+$	2	0.16						78Sh06	
4831.4(5)	$\langle 27^+ \rangle$							0.32(6) ps		

(continued) **$^{75}_{34}$Se**

E^* [keV]	$2J^\pi$	L	S' (d,p)	L	$S_{\ell j}$ (p,d)	L	$(2J+1)S$ (d,t)	$T_{1/2}$ or Γ_{cm}	Ref.	Branching ratios in percentage E_f^*: 0.0 112 133 287 293 $2J_f^\pi$: 5^+ 7^+ 9^+ 3^- 1^-
5037.5(23)	$\langle 25^- \rangle$									
5476.1(5)	$\langle 29^+ \rangle$							0.11(2) ps		
5585.9(16)	$\langle 27^- \rangle$									
6059.5(11)	$\langle 29^- \rangle$									
6172.6(8)	$\langle 31^+ \rangle$									
6870.7(17)	$\langle 33^+ \rangle$									
7649.7(15)	$\langle 33^- \rangle$									
7756.0(20)	$\langle 35^+ \rangle$									
8448.2(25)	$\langle 37^+ \rangle$									
10243.2(32)	$\langle 41^+ \rangle$									
			78Sh06		79Ba61		79Ba61		Ref.	

Additional data on this isotope can be found in [92Jo04, 91Sa22, 73Sa39].

$S'=(2J+1)S$ and L for (d,p) reaction were obtained by comparison with DWBA calculations [78Sh06, 99Fa05].

$S_{\ell j}$ for the (p,d) reaction were derived from the relation $d\sigma/d\Omega_{exp}=2.29 S_{\ell j}(2j+1)^{-1} d\sigma/d\Omega_{DWBA}$ [79Ba61].

Energy levels and branching ratios [99Fa05]. Part 2 **$^{75}_{34}$Se**

E^* [keV]	$2J^\pi$	E_f^*: $2J_f^\pi$:	Branching ratios in percentage 428 5^-	586 3^-	611 1^+	628.4 5^+	663.9 5^-	747.6 7^-	777.3 5^-	790.0 $7^{\langle+\rangle}$	814.3 11^+	839.9 3^+
663.955(2)	5^-		16.2(5)									
747.649(3)	7^-		59(2)		2.15(9)		1.4(5)					
777.321(3)	5^-		28(2)	9(1)			1.1(3)					
789.988(6)	$7^{\langle+\rangle}$					1.5(4)						
839.892(3)	3^+				6.7(2)	16.7(7)						
859.535(3)	3^-		56(2)			0.94(12)	1.7(3)					
895.273(3)	$1^-,3^-$		10(5)	4.9(6)	5.7(6)							
934.10(9)	13^+										4(1)	
953.296(10)	$5^+,7$		1.1						8(1)			
962.642(3)	3^-		6.2(7)	1.5(2)		1.3(1)	5.4(4)					0.9(1)
1003.84(1)	5^+					1.7(3)						
1020.47(1)	$1^-,3^-$				3.3(1)							
1047.18(1)	$5^-,7^-$		50(2)									
1073.82(1)	5^-		5(1)	15.6(5)				13.4(6)		0.35		
1078.69(7)	9^-		50(3)					32(9)				
1181.85(18)	$5^-,7^-$		48(24)	x					52(24)			
1184.19(1)	1,3,5			23(2)								
1189.2(3)			x									
1198.53(1)	5^+		32(2)				6.8(7)					
1245.24(1)	3^-			12(1)								

(continued) **$^{75}_{34}$Se**

E^*	$2J^\pi$		Branching ratios in percentage									
		E_f^*:	428	586	611	628.4	663.9	747.6	777.3	790.0	814.3	839.9
[keV]		$2J_f^\pi$:	5^-	3^-	1^+	5^+	5^-	7^-	5^-	$7^{\langle+\rangle}$	11^+	3^+
1259.93(24)						80(3)						
1301.71(2)	5,7		51(3)									
1374.51(2)	1,3,5			100								
1406.69(20)	$5^-.7^-$		100									
1431.95(6)							59(27)	41(4)				
1439.0(4)	$\langle 7^+\rangle$									73(2)		
1454.68(2)				100								
1456.63(22)	$\langle 5^-\rangle$			88(3)								
1487.57(9)	$\langle 11^-\rangle$							59(6)			x	
1491.45(13)	$\langle 7^+\rangle$		6.8(2)	5.7(2)								
1550.12(20)	$7^+,9^+$					28(1)						
1560.89(1)	$\langle 5,7^-\rangle$			19.0(7)				9.5(3)				
1589.53(1)	5^+				76(11)							
1628.43(23)	$\langle 13^+\rangle$										51(10)	
1652.67(15)	5^+		22(1)	18(1)	22.1(8)							
1667.77(18)	$\langle 5^-\rangle$					21.7(8)						27(2)
1740.96(13)	$\langle 15^+\rangle$										36(8)	

Energy levels and branching ratios [99Fa05]. Part 3 **$^{75}_{34}$Se**

E^*	$2J^\pi$		Branching ratios in percentage									
		E_f^*:	859.5	934.1	1078.7	1487.6	1628.4	1741.0	1905.2	1910.8	2391.1	2766.0
[keV]		$2J_f^\pi$:	3^-	13^+	9^-	$\langle 11^-\rangle$	$\langle 13^+\rangle$	$\langle 15^+\rangle$	$\langle 13^-\rangle$	$\langle 17^+\rangle$	$\langle 15^-\rangle$	$\langle 19^+\rangle$
1184.19(1)	1,3,5		9.8(5)									
1487.57(9)	$\langle 11^-\rangle$				26(6)							
1560.89(1)	$\langle 5,7^-\rangle$		52(2)									
1628.43(23)	$\langle 13^+\rangle$			29(11)								
1740.96(13)	$\langle 15^+\rangle$			64(20)								
1803.1(4)	$3^+,5^+$				100							
1905.19(10)	$\langle 13^-\rangle$				66(7)	34(12)						
1910.84(21)	$\langle 17^+\rangle$			94(7)				6(3)				
1912.3(20)	$\langle 1^-,3^-\rangle$			100								
2391.07(13)	$\langle 15^-\rangle$					70(12)			30(6)			
2595.77(25)	$\langle 17^+\rangle$						75(38)			25(13)		
2766.03(23)	$\langle 19^+\rangle$							44(12)		56(6)		
2840.44(12)	$\langle 17^-\rangle$								60		40	
2871.73(14)	$\langle 17^-\rangle$								100			
3018.5(3)	$\langle 21^+\rangle$									95(5)		5.0(25)
3289.06(24)	$\langle 19^-\rangle$										100	
3305.94(15)	$\langle 19^-\rangle$										11.1	
3432.1(8)	$\langle 19^-\rangle$										71	
3746.4(3)	$\langle 23^+\rangle$											29(14)

Energy levels and branching ratios [99Fa05]. Part 4 **$^{75}_{34}$Se**

E^*	$2J^\pi$		Branching ratios in percentage									
		E_f^*:	2840.4	2871.7	3018.5	3289.1	3305.9	3432.1	3646.4	3746.4	3884.7	4199.3
[keV]		$2J_f^\pi$:	$\langle 17^- \rangle$	$\langle 17^- \rangle$	$\langle 21^+ \rangle$	$\langle 19^- \rangle$	$\langle 19^- \rangle$	$\langle 19^- \rangle$	$\langle 21^- \rangle$	$\langle 23^+ \rangle$	$\langle 21^- \rangle$	$\langle 25^+ \rangle$
3305.94(15)	$\langle 19^- \rangle$		89									
3432.1(8)	$\langle 19^- \rangle$			29								
3646.44(15)	$\langle 21^- \rangle$		38	8		17	38					
3746.4(3)	$\langle 23^+ \rangle$				71(19)							
3884.7(20)	$\langle 21^- \rangle$			100								
4199.3(4)	$\langle 25^+ \rangle$				85(15)					15(7)		
4267.6(10)	$\langle 23^- \rangle$					100						
4472.2(13)	$\langle 23^- \rangle$							100				
4706.7(3)	$\langle 25^- \rangle$								71			
4831.4(5)	$\langle 27^+ \rangle$									43(14)		57(35)
5037.5(23)	$\langle 25^- \rangle$										100	
5476.1(5)	$\langle 29^+ \rangle$											71

Energy levels and branching ratios [99Fa05]. Part 5 **$^{75}_{34}$Se**

E^*	$2J^\pi$		Branching ratios in percentage								
		E_f^*:	4267.6	4472.2	4706.7	4831.4	5476.1	6059.5	6172.6	6870.7	8448.2
[keV]		$2J_f^\pi$:	$\langle 23^- \rangle$	$\langle 23^- \rangle$	$\langle 25^- \rangle$	$\langle 27^+ \rangle$	$\langle 29^+ \rangle$	$\langle 29^- \rangle$	$\langle 31^+ \rangle$	$\langle 33^+ \rangle$	$\langle 37^+ \rangle$
4706.7(3)	$\langle 25^- \rangle$		29								
5476.1(5)	$\langle 29^+ \rangle$					29					
5585.9(16)	$\langle 27^- \rangle$			100							
6059.5(11)	$\langle 29^- \rangle$				100						
6172.6(8)	$\langle 31^+ \rangle$					77	23				
6870.7(17)	$\langle 33^+ \rangle$						100				
7649.7(15)	$\langle 33^- \rangle$							100			
7756.0(20)	$\langle 35^+ \rangle$								100		
8448.2(25)	$\langle 37^+ \rangle$									100	
10243.2(32)	$\langle 41^+ \rangle$										100

Energy levels and branching ratios [84Si14, 95Si03]. **$^{76}_{34}$Se**

E^*	J^π	L	C^2S'	σ (d,d')	σ (d,t)	$T_{1/2}$ or	Ref.		Branching ratios in percentage				
								E_f^*:	0.0	559	1122	1216	1331
[keV]			(τ,d)	μb/sr	μb/sr	Γ_{cm}		J_f^π:	0^+	2^+	0^+	2^+	4^+
0.0	0^+	1	1.04		570	Stable	75Ar29						
559.102(5)	2^+	1+3	0.2,09*	6800	550	12.3(2) ps	75Ar29		100				
1122.28(1)	0^+	1	0.58			11(5) ps	75Ar29		x	100			
1216.15(1)	2^+	1+3	0.2,0.05	1390	490	3.4(2) ps	75Ar29		37(2)	63(1)			
1330.86(1)	4^+	3	0.21			1.52(5) ps	75Ar29			100			

(continued) **$^{76}_{34}$Se**

E^* [keV]	J^π	L	C^2S' (τ,d)	σ (d,d') μb/sr	σ (d,t) μb/sr	$T_{1/2}$ or Γ_{cm}	Ref.	Branching ratios in percentage E_f^*: J_f^π:	0.0 0^+	559 2^+	1122 0^+	1216 2^+	1331 4^+
1688.96(1)	3^+					3.2(+12-6) ps				71(3)		25(1)	4(1)
1787.66(1)	2^+	1+3	0.34,0.4	330	170	6(+6-2) ps	75Ar29		15(1)	59(2)	19(1)	6(1)	1.8(1)
1791.2(2)												x	
1881.2(4)	$\langle 1–3\rangle$								2.4(12)			98	
2025.99(1)	4^+	3	0.15			1.8(4) ps	75Ar29			3(2)		65(3)	32(3)
2127.22(1)	$\langle 2\rangle^+$	1+3	0.13,0.7	130	200		75Ar29		11(3)	56(3)		3(2)	7(2)
2170.55(1)	$\langle 0^+\rangle$	1+3	=0.02				75Ar29			68(4)		16(12)	
2262.4(3)	6^+					0.62(7) ps							100
2346.9(8)												80(60)	
2362.96(1)	2^+,3^+									1.9(13)			1.3(7)
2429.09(1)	3^-	4	1.32			14(7) ps	75Ar29		1.9(2)	3.3(5)		85(5)	0.21(3)
2489.3(3)	5^+					0.9(+3-2) ps							33(2)
2514.66(1)	$\langle 2\rangle^+$	1+3	0.24,0.1				75Ar29			32(3)	x		
2570(10)				340	230		65Li08						
2605.7(5)										100			
2619.2(4)	$\langle 4\rangle^+$	3	0.60				75Ar29						100
2630.8(5)	$\langle 1,2\rangle$			250	170		65Li08		32(10)	68(56)			
2655.32(4)	1								4.3(2)	54(3)	2.4(2)	25(2)	2(1)
2669.88(4)	2^-	2+4	0.23,0.2				75Ar29		0.05(1)	59(3)		19(1)	
2691(2)	$\langle 3^-\rangle$												
2804.5(4)	$\langle 4^+\rangle$											40	60
2812.4(2)												100	
2816.8(3)										35		65	
2824.76(1)	5^-	4	2.35			6.2(14) ps	75Ar29						27(2)
2853(2)	$\langle 4^+\rangle$												
2859.75(3)	4^-	4+2	1.73,0.2	340	290	1.2(5) ps	75Ar29						64(5)
2869.7(3)	$\langle 1–4\rangle$									65		35	
2910.98(2)	$\langle 1–4\rangle$												
2919.9(10)	$\langle 4\rangle^+$	3	0.14				75Ar29						
2950.53(5)	1^+,2^+								60(3)	39(2)			
2968.4(7)	$\langle 2^-–4^-\rangle$	4	0.34				75Ar29						
2976.2(4)	6^+					1.2(+7-4) ps							
3009.4(5)	$\langle 2^+\rangle$	1+3	0.03,0.03	260	390		75Ar29			100			
3042(4)	$\langle 6^+\rangle$												
3045.7(3)	$\langle 5^-\rangle$					<0.28 ns							47(3)
3069.75(4)	$\langle 1,2\rangle^+$								0.2(1)	10(1)		76(4)	
3084.4(5)	$\langle 1^+–3^+\rangle$	1+3	0.11,0.11				75Ar29			100			
3105.7(3)	$\langle 3^-\rangle$									100			
3160.07(6)	$\langle 2\rangle$								2.5(3)	12(1)		8(1)	
3191.6(4)	$\langle 1^+–3^+\rangle$	1+3	0.32,0.59				75Ar29						
3216(4)	$\langle 3^-,4^+\rangle$	1+3	0.42,1.82				75Ar29						
3219.2(4)	$\langle 1^+–3^+\rangle$												
3225.7(6)	$\langle 6,8^+\rangle$												
3239.0(5)													
3262.3(3)	6^-					12(6) ps							

(continued)

$^{76}_{34}$Se

E^* [keV]	J^π	L	C^2S' (τ,d)	σ (d,d') μb/sr	σ (d,t) μb/sr	$T_{1/2}$ or Γ_{cm}	Ref.	Branching ratios in percentage E_f^*: J_f^π:	0.0 0^+	559 2^+	1122 0^+	1216 2^+	1331 4^+
3268.8(4)	$\langle 2^- – 4^- \rangle$	4+2	1.67,0.18				75Ar29						
3269.8(5)	8^+					0.35(7) ps							
3294.7(5)	$\langle 4^+ \rangle$	1+3	0.22,0.89				75Ar29						
3297.4(5)	$\langle 1^+ – 3^+ \rangle$									100			
3312.0(4)	$\langle 6^- \rangle$					0.14(7) ns							
3351.54(7)	$\langle 1,2 \rangle^+$	1+3	0.64,0.64				75Ar29		2.9(3)	64(3)	1.1(7)	11(1)	
3378(10)	$\langle 1^+ – 3^+ \rangle$	1+3	0.43,0.05				75Ar29						
3408(4)	$\langle 4^+ \rangle$												
3417(10)	X^-	4	2.50				75Ar29						
3432.1(4)	7^+					0.8(+4-2) ps							
3441.5(3)	7^-					3.6(7) ps							
3442(10)	$\langle 1^+ – 3^+ \rangle$	1+3	0.11,0.16				75Ar29						
3443(4)	$\langle 3^- \rangle$												
3459.40(8)	$\langle 2^+ \rangle$									13(5)			
3475(4)	$\langle 4^+ \rangle$	1+3	0.59,1.37				75Ar29						
3530(10)	$\langle 1^+ – 3^+ \rangle$	1+3	0.65,0.28				75Ar29		100				
3556.46(8)	$\langle 1,2 \rangle$	1+3	0.08,0.56				75Ar29			62(5)		6(2)	
3604.08(8)	$1^+,2^+$	1+3	0.08,0.18				75Ar29		87(6)	1.2(4)	8(2)		
3630(5)	$\langle 1^+ – 3^+ \rangle$	1+3	0.08,0.32				75Ar29						
3651.2(3)		1+3	0.20,1.83				75Ar29		x	x			
3696.3(3)	$\langle 7^- \rangle$					28(7) ps							
3697(4)	$\langle 1^+ – 3^+ \rangle$	1+3	0.49,1.16				75Ar29						
3730.7(10)	$\langle 3^- \rangle$												
3741(10)	$\langle 1^+ – 3^+ \rangle$	1+3	0.30,0.71				75Ar29						
3776(4)	$\langle 4^+ \rangle$												
3785.7(5)	$\langle 8^+ \rangle$					0.9(+5-3) ps							
3790(10)	$\langle \leq 3^+ \rangle$	1	0.66				75Ar29						
3806(4)	$\langle 5^- \rangle$												
3808(10)	$\langle 1^+ – 3^+ \rangle$	1+3	0.32,0.17				75Ar29						
3853.6(5)	$\langle 8 \rangle^+$	1+3	0.21,0.85			0.23(5) ps	75Ar29						
3861.0(4)													
3906.3(3)	$\langle 1^+ – 3^+ \rangle$	1+3	0.23,0.93				75Ar29						
3915.8(6)	$\langle 4^+ \rangle$												
3929.1(6)	$\langle 1,2 \rangle$								32(5)	32(5)		26(8)	
3932.6(4)													
3948(4)	$\langle 4^+ \rangle$	1+3	0.14,0.94				75Ar29						
3966.2(6)													
3970.6(4)	$\langle 1^+,2^+ \rangle$								2(1)	41(2)		11(3)	
4001.7(3)	$\langle 3^- \rangle$	1+3	0.11,0.62				75Ar29						
4005.6(6)													
4008.6(6)	$\langle 8^- \rangle$					2.2(7) ps							
4019.3(5)									12(3)				70(8)
4044.5(2)	$\langle 1^+ – 3^+ \rangle$	1+3	0.44,0.67				75Ar29						
4084.3(2)	$\langle 1,2 \rangle$									60			
4119(4)	$\langle 2^- – 4^- \rangle$	4+2	0.42,0.02				75Ar29						

(continued)

$^{76}_{34}$Se

E^* [keV]	J^π	L	C^2S' (τ,d)	σ (d,d') μb/sr	σ (d,t) μb/sr	$T_{1/2}$ or Γ_{cm}	Ref.	Branching ratios in percentage E_f^*: 0.0 559 1122 1216 1331 J_f^π: 0^+ 2^+ 0^+ 2^+ 4^+
4137(10)	$\langle 1^+–3^+\rangle$	1+3	0.29,0.43				75Ar29	
4170(4)	$\langle 4^+\rangle$							
4173.1(9)	$\langle 1,2\rangle$							11(4)
4199.6(4)	$\langle 1,2\rangle$							[40] [24]
4206.4(5)								
4214.0(5)	$\langle 8^-\rangle$					1.7(+15-8) ps		
4215.5(2)	$\langle 1^+,2^+\rangle$	1+3	0.26,0.62				75Ar29	26(2)
4218(4)	$\langle 3^-\rangle$							
4240.4(2)	$\langle 1–4\rangle$							
4257.4(2)	$\langle 1–4\rangle$							
4282.7(5)	$\langle 2^-–4^-\rangle$							
4299.5(6)	$\langle 10\rangle^+$					0.49(+10-7) ps		
4324.5(6)	$\langle 9\rangle^-$	4+2	0.24,0.13			1.4(4) ps	75Ar29	
4340(4)	$\langle 3^-\rangle$							
4351.2(7)	$\langle 1–4\rangle$							
4369.3(3)	$\langle 4^+\rangle$							
4383.9(2)	$\langle 1^+–3^+\rangle$							
4399(4)	$\langle 4^+\rangle$	1+3	0.07,0.30				75Ar29	
4405.2(7)	$\langle 9^+\rangle$					0.9(2) ps		
4425(10)	$\langle 1^+–3^+\rangle$	1+3	0.18,0.41				75Ar29	
4436.9(10)	$\langle 1,2\rangle$							78(22) 22(11)
4473.8(3)	$\langle 1^+–3^+\rangle$	1+3	0.08,0.35				75Ar29	
4488.9(3)	$\langle 1–4\rangle$							
4523(3)	$\langle 3^-\rangle$							
4567(10)								
4605.8(7)	$\langle 1^+,2^+\rangle$	1+3	0.10,0.57				75Ar29	4(1) 9(3)
4611(4)	$\langle 3^-\rangle$							
4647(10)	$\langle 1^+–3^+\rangle$	1+3	0.15,0.60				75Ar29	
4658(4)	$\langle 3^-\rangle$	2+4	0.65,0.12				75Ar29	
4687.5(5)	$\langle 10\rangle^+$					0.49(7) ps		
4723(4)	$X^{\langle+\rangle}$	1+3	0.07,0.44				75Ar29	
4728.4(5)								
4751.5(5)	$\langle 1^+–3^+\rangle$	1+3	0.06,0.43				75Ar29	
4771(4)	$\langle 3^-\rangle$							
4811(4)	$\langle 1^+–3^+\rangle$	1+3	0.18,0.53				75Ar29	
4836(10)	$\langle 1^+–3^+\rangle$	1+3	0.10,0.31				75Ar29	
4859(4)	$X^{\langle+\rangle}$	1+3	0.07,0.41				75Ar29	
4911(10)	$\langle 1^+–3^+\rangle$	1+3	0.11,0.32				75Ar29	
4935(4)	$\langle 3^-\rangle$							
4974(10)	$\langle 1^+–3^+\rangle$	1+3	0.14,0.81				75Ar29	
4998(4)	$\langle 1^+–3^+\rangle$	1+3	0.07,0.30				75Ar29	
5032.0(2)	$\langle 2^-–4^-\rangle$	2+4	0.23,0.12				75Ar29	
5068.0(8)	$\langle 10\rangle^-$					1.0(+4-2) ps		
5081(4)	$\langle 3\rangle^-$	2+4	0.47,0.28				75Ar29	
5139.8(6)	$\langle 1–4\rangle$							

(continued) **$^{76}_{34}$Se**

E^*	J^π	L	C^2S'	σ (d,d')	σ (d,t)	$T_{1/2}$ or	Ref.	Branching ratios in percentage				
								E_f^*:	0.0	559	1122	1216	1331
[keV]			(τ,d)	μb/sr	μb/sr	Γ_{cm}		J_f^π:	0^+	2^+	0^+	2^+	4^+
5174(4)	$\langle 3^- \rangle$												
5195.3(2)	$\langle 1–4 \rangle$												
5261(4)	$\langle 4^+ \rangle$												
5303(4)	$\langle 3^- \rangle$												
5401(4)													
5432.5(8)	$\langle 12^+ \rangle$					0.2(1) ps							
5510(10)													
5938.9(6)	$\langle 1–4 \rangle$												
6005(10)													
12528													
12578													
12678													
12718													
12788													
12888													
12938													
13138													
13278													
13418													
13478													
13528													
13598													
13728													
13928													
14038													
14118													
14198													
			74Ar29	65Li08	65Li08		Ref.						

Additional data on this isotope can be found in [04Sh17, 01Tr09].
Abundance: 9.37(29) %.
* For mixed L=transfers two $(2J+1)C^2S$ factors correspond to different L-values.
Parameters $\beta_L R$ from the (p,p′) reaction [86Og01] and β_L from the (α, α') reaction [88Ba35] are given in [95Si03].

Energy levels and branching ratios [84Si14, 95Si03]. Part 2 **$^{76}_{34}$Se**

E^*	J^π					Branching ratios in percentage						
		E_f^*:	1689	1788	1791	1881.2	2026.0	2127.2	2170.5	2262.4	2363.0	2429.1
[keV]		J_f^π:	3^+	2^+		$\langle 1,2,3 \rangle$	4^+	$\langle 2 \rangle^+$	$\langle 0^+ \rangle$	6^+	$\langle 2^+,3^+ \rangle$	3^-
2025.99(1)	4^+			x								
2127.22(1)	$\langle 2 \rangle^+$		14(2)	9(1)	x							
2170.55(1)	$\langle 0^+ \rangle$			16(3)								

(continued) **$^{76}_{34}$Se**

E^*	J^π	Branching ratios in percentage									
	E_f^*:	1689	1788	1791	1881.2	2026.0	2127.2	2170.5	2262.4	2363.0	2429.1
[keV]	J_f^π:	3^+	2^+		⟨1,2,3⟩	4^+	⟨2⟩$^+$	⟨0^+⟩	6^+	⟨2^+,3^+⟩	3^-
2346.9(8)					20(16)						
2362.96(1)	2^+,3^+		97(7)								
2429.09(1)	3^-	7.1(4)		0.21(8)		1.4(1)	0.54(8)				
2489.3(3)	5^+	67(5)									
2514.66(1)	⟨2⟩$^+$		68(5)								
2619.2(4)	⟨4⟩$^+$	<25									
2630.8(5)	⟨1,2⟩	<48									
2655.32(4)	1		12(1)					0.6(2)			
2669.88(4)	2^-	8(1)	10(1)					4(2)			
2824.76(1)	5^-					42(3)			11		18(1)
2859.75(3)	4^-										36(4)
2910.98(2)	⟨1–4⟩									100	
2950.53(5)	1^+,2^+			1.3(2)							
2976.2(4)	6^+					92(6)			8		
3069.75(4)	⟨1,2⟩$^+$	13(1)		0.4(2)			<1.0	0.9(2)			
3160.07(6)	⟨2⟩	39(2)	9(1)				10(1)				10(1)
3225.7(6)	⟨6,8^+⟩								100		
3262.3(3)	6^-								24(1)		
3269.8(5)	8^+								100		
3351.54(7)	⟨1,2⟩$^+$	1.6(6)					3.2(12)	1.0(5)			x
3432.1(4)	7^+								19(2)		
3441.5(3)	7^-								8		
3459.40(8)	⟨2^+⟩	<20	11(3)					2(1)			27(3)
3556.46(8)	⟨1,2⟩						<18				
3785.7(5)	⟨8^+⟩								53		
3853.6(5)	⟨8⟩$^+$								63		
3929.1(6)	⟨1,2⟩						10(5)				
3970.6(4)	⟨1^+,2^+⟩		18(5)								
4044.5(2)	⟨1^+–3^+⟩		x								
4084.3(2)	⟨1,2⟩										40
4173.1(9)	⟨1,2⟩						89(7)				
4199.6(4)	⟨1,2⟩		[16]								
4383.9(2)	⟨1^+–3^+⟩						x				

Energy levels and branching ratios [84Si14, 95Si03]. Part 3 **$^{76}_{34}$Se**

E^*	J^π	Branching ratios in percentage									
	E_f^*:	2489.3	2514.7	2630.8	2655.3	2669.9	2824.8	2859.7	2950.5	2976.2	3045.7
[keV]	J_f^π:	5^+	⟨2⟩$^+$	⟨1,2⟩	1	2^-	5^-	4^-	1^+,2^+	6^+	⟨5^-⟩
2824.76(1)	5^-	3									
3045.7(3)	⟨5^-⟩						53(3)				
3069.75(4)	⟨1,2⟩$^+$					<1.7					

(continued) **$^{76}_{34}$Se**

E^*	J^π					Branching ratios in percentage						
		E_f^*:	2489.3	2514.7	2630.8	2655.3	2669.9	2824.8	2859.7	2950.5	2976.2	3045.7
[keV]		J_f^π:	5^+	$\langle 2\rangle^+$	$\langle 1,2\rangle$	1	2^-	5^-	4^-	$1^+,2^+$	6^+	$\langle 5^-\rangle$
3160.07(6)	$\langle 2\rangle$					4	6(1)					
3239.0(5)								100				
3262.3(3)	6^-							60(4)	16(1)			
3312.0(4)	$\langle 6^-\rangle$							46(4)				54(4)
3351.54(7)	$\langle 1,2\rangle^+$			4.4(8)		5.6(3)	4.8(3)			<4		
3432.1(4)	7^+		81(6)									
3441.5(3)	7^-							80(6)			5.2	
3459.40(8)	$\langle 2^+\rangle$					25(2)	22(1)					
3556.46(8)	$\langle 1,2\rangle$					10(1)	22(1)					
3604.08(8)	$1^+,2^+$						4(1)					
3696.3(3)	$\langle 7^-\rangle$											33
3970.6(4)	$\langle 1^+,2^+\rangle$					7(2)	22(2)					
4019.3(5)				18(7)								
4084.3(2)	$\langle 1,2\rangle$					<90						
4215.5(2)	$\langle 1^+,2^+\rangle$					74(4)						
4605.8(7)	$\langle 1^+,2^+\rangle$				18(15)							

Energy levels and branching ratios [84Si14, 95Si03]. Part 4 **$^{76}_{34}$Se**

E^*	J^π					Branching ratios in percentage						
		E_f^*:	3069.7	3160.1	3262.3	3269.8	3312.0	3351.5	3432.1	3441.5	3442	3459.4
[keV]		J_f^π:	$\langle 1,2\rangle^+$	$\langle 2\rangle$	6^-	8^+	$\langle 6^-\rangle$	$\langle 1,2\rangle^+$	7^+	7^-		$\langle 2^+\rangle$
3441.5(3)	7^-				6(1)							
3696.3(3)	$\langle 7^-\rangle$				11		17				40(3)	
3785.7(5)	$\langle 8^+\rangle$					47						
3853.6(5)	$\langle 8\rangle^+$					37(3)						
4008.6(6)	$\langle 8^-\rangle$				100							
4199.6(4)	$\langle 1,2\rangle$			[20]								
4214.0(5)	$\langle 8^-\rangle$						73(4)					
4299.5(6)	$\langle 10\rangle^+$					100						
4324.5(6)	$\langle 9\rangle^-$									100		
4405.2(7)	$\langle 9^+\rangle$								100			
4605.8(7)	$\langle 1^+,2^+\rangle$		30(12)					15(5)				11(3)
4687.5(5)	$\langle 10\rangle^+$					39(2)						
4728.4(5)										67		

Energy levels and branching ratios [84Si14, 95Si03]. Part 5 **$^{76}_{34}$Se**

E^*	J^π	Branching ratios in percentage				
		E^*_f:	3696.3	3853.6	3970.6	4008.6	4299.5
[keV]		J^π_f:	$\langle 7^- \rangle$	$\langle 8 \rangle^+$	$\langle 1^+,2^+ \rangle$	$\langle 8^- \rangle$	$\langle 10 \rangle^+$
4005.6(6)			100				
4214.0(5)	$\langle 8^- \rangle$		27				
4605.8(7)	$\langle 1^+,2^+ \rangle$				13(4)		
4687.5(5)	$\langle 10 \rangle^+$			47			14
4728.4(5)			33				
5068.0(8)	$\langle 10 \rangle^-$					100	
5432.5(8)	$\langle 12^+ \rangle$						100

Energy levels and branching ratios [97Fa12]. **$^{77}_{34}$Se**

E^*	$2J^\pi$	L	S'	L	$S_{\ell j}$	σ (d,t)	$T_{1/2}$ or	Ref.	Branching ratios in percentage				
									E^*_f:	0.0	162	175.3	239	250
[keV]			(d,p)		(p,d)	μb/sr	Γ_{cm}		$2J^\pi_f$:	1^-	7^+	9^+	3^-	5^-
0.0	1^-	1	0.78	1	0.35	1550	Stable	78Mo12						
161.922(1)	7^+						17.36(5) s			100				
175.306(1)	9^+	4	4.56	4	2.54	1510		78Mo12			x			
238.999(1)	3^-	1	0.30				18(4) ps	78Mo12		100				
249.788(1)	5^-	3	1.34	$\langle 3 \rangle$	2.38	1130	9.68(6) ns	78Mo12		68(1)	32(1)			
301.150(1)	5^+	2	0.23	$\langle 2 \rangle$	0.09	<100		78Mo12			85(1)	9(1)	0.4(1)	5.1(8)
439.452(1)	5^-	3	0.35	3	0.37	310	23.0(13) ps	78Mo12		55(1)	0.70(9)		44(1)	0.4(1)
520.639(1)	3^-	1	0.67	1	0.98		4(2) ps	78Mo12		90(1)			9.1(2)	1.3(1)
581.011(2)	7^-						34(6) ps				14.1(8)	5.7(4)	7.5(6)	69(1)
680.105(2)	5^+	2	0.96	2	0.097	<500		78Mo12			82(7)	8(1)	0.4(1)	1.0(1)
796.152(4)	$7^{\langle + \rangle}$						0.62(17) ps				21(2)	28(1)		
808.185(3)	7^-						0.31(7) ps					0.8(1)	49(4)	2.0(3)
817.856(2)	1^-	1	0.28	1	0.26			78Mo12		21(1)			29(1)	9(2)
824.431(2)	$\langle 5 \rangle^-$					1000	0.45(14) ps	65Li08		0.28(5)	1.66(5)		32(1)	24(1)
911.531(2)	$\langle 3 \rangle^+$									2.5(5)	19(1)			0.3(1)
946.983(2)	1^+	0	0.36					78Mo12		35(4)	1.6(1)		14(1)	
970.04(18)	$\langle 11^+ \rangle$						0.62(21) ps				21(5)	79(5)		
978.30(10)	9^-						0.69(21) ps				8(3)	8(3)		64(2)
999.2(7)														x
1005.184(2)	3^-	1	0.19	1	0.15		0.14(7) ps	78Mo12		20.7(6)	0.3(2)		1.0(1)	37(1)
1024.14(16)	$\langle 13^+ \rangle$						0.35(10) ps					100		
1126.64(13)	$\langle 11^+ \rangle$						0.76(21) ps				42(12)	58(12)		
1128.113(3)	1^+	0	0.64					78Mo12		35(4)			21(4)	
1132.458(4)											16(2)	22(2)		
1172.48(16)	9^-						0.38(10) ps							
1179.3(7)	$\langle 5\text{–}9^- \rangle$			$\langle 3 \rangle$	0.25*		0.90(14) ps	79Ba61						
1186.984(2)	$\langle 3 \rangle$									13(1)			2.7(3)	1.1(1)
1193.1(4)	$\langle 9^+ \rangle$						1.18(21) ps							
1230.624(6)	$\langle 5 \rangle^-$			3	0.54		>0.2 ps	79Ba61		2.0(5)			48(2)	8(1)

(continued) **$^{77}_{34}$Se**

E^* [keV]	$2J^\pi$	L	S' (d,p)	L	$S_{\ell j}$ (p,d)	σ (d,t) μb/sr	$T_{1/2}$ or Γ_{cm}	Ref.	Branching ratios in percentage E_f^*: 0.0 $2J_f^\pi$: 1^-	162 7^+	175.3 9^+	239 3^-	250 5^-
1252.965(5)	5^+	2	0.88				0.62(14) ps	78Mo12					
1282.8(4)	$\langle 7^- \rangle$												
1351.57(12)	$\langle 11^- \rangle$						0.49(10) ps						
1364.274(4)	$\langle 3^-,5^+ \rangle$			$\langle 1 \rangle$	0.1*		>0.5 ps	79Ba61					7(1)
1402.486(3)	$\langle 3^- \rangle$								19(1)			45(6)	
1411.626(4)	$\langle 3^- \rangle$								32(4)			16(2)	21(3)
1439(5)	3^+	2	0.84					78Mo12					
1488.237(4)	$1^-,3^-$			1	0.28*			79Ba61	19(3)			17(1)	
1511.024(3)	$\langle 3 \rangle$			$\langle 3 \rangle$	0.47*			79Ba61	10(1)	1.8(3)		15(1)	3.4(6)
1607.701(8)	$\langle 3,5^+ \rangle$						>0.4 ps					5.0(8)	
1616.58(21)	$\langle 11^- \rangle$												
1620.5(7)	$\langle 11^+ \rangle$												
1623.144(5)	$\langle 1^- \rangle$						0.14(7) ps		27(3)			53(4)	5.7(5)
1714.749(8)	$1^-,3^-$	1	0.041	1	0.26*			65Li08	30(2)			28(2)	
1721.94(19)	$\langle 13^+ \rangle$												
1817.637(6)	1^-	1	0.23				0.06(3) ps	65Li08				12.3(8)	
1830.863(12)	$\langle 1^-,3 \rangle$								46(6)				11(3)
1886.52(17)	13^-						0.49(14) ps						
1888.67(4)										38(5)			
1916.064(11)	$\langle 1^+,3 \rangle$								21(3)			22(3)	
1998.6(10)							0.31(7) ps						
2055.45(22)	$\langle 15^+ \rangle$						0.24(7) ps						
2057(12)	5^+	2	0.30					78Mo12					
2092.09(19)	$\langle 13^- \rangle$						0.69(14) ps						
2103.37(21)	$\langle 17^+ \rangle$						0.35(7) ps						
2142.60(7)	$\langle 1–5^- \rangle$								92(6)				
2157(12)	5^+	2	0.16					78Mo12					
2212.14(3)	$1^-,3^-$			1	0.11*			79Ba61	53(4)				
2240.22(22)	$\langle 15^+ \rangle$						0.97(35) ps						
2248.923(7)	$3^+,5^+$	2	0.29					65Li08				35(6)	
2264.16(6)	$\langle 15^- \rangle$						0.42(10) ps						
2264.43(6)	$\langle 3^- \rangle$												
2320.13(20)	$\langle 1^+–5^+ \rangle$												
2339.94(5)	$\langle 3^-,5^+ \rangle$												22(14)
2373.36(5)	$\langle 3^+,5^+ \rangle$									100			
2393.012(23)	3^-						0.10(+6-3) ps		10(1)				
2455.449(10)	$\langle 1^+–5^+ \rangle$												
2491.92(5)	$\langle 1–5^- \rangle$	[2]	0.39					65Li08		20(4)			
2551.90(8)	$\langle 3^- \rangle$												
2553.84(9)	$\langle 1–5^+ \rangle$												
2579.8(10)	$\langle 15^+ \rangle$												
2584(12)	$\langle 3^+,5^+ \rangle$	$\langle 2 \rangle$	0.50					65Li08					
2611.17(23)	$\langle 15^- \rangle$												
2640.967(24)	$\langle 3^+,5^+ \rangle$	$\langle 2 \rangle$	0.22					78Mo12					
2716.32(7)	$\langle 1^+–5^+ \rangle$												

(continued)

$^{77}_{34}$Se

E^* [keV]	$2J^\pi$	L (d,p)	S' (d,p)	L (p,d)	$S_{\ell j}$ (p,d)	σ (d,t) μb/sr	$T_{1/2}$ or Γ_{cm}	Ref.	Branching ratios in percentage E^*_f: 0.0 $2J^\pi_f$: 1^-	162 7^+	175.3 9^+	239 3^-	250 5^-
2776.77(4)	⟨1^-,3⟩								27(9)				18(4)
2789.6(3)	⟨17^+⟩												
2809.10(9)	⟨1,3⟩								73(4)				
2815.46(10)	⟨1^-–5^+⟩												100
2818.3(4)	⟨15^-⟩												
2853.09(5)	⟨1^-,3^-⟩											33(2)	
2864.46(21)	⟨17^-⟩						0.42(+14-7) ps						
2869.3(4)	⟨15^-⟩												
2872.98(7)	⟨3⟩								54(3)				16(2)
2891.94(4)	⟨3^-⟩						0.049(+21-14) ps						
2950	3^+,5^+	2	0.25					78Mo12					
2966.79(17)	⟨17^-⟩												
2982.91(9)	⟨1,3⟩								100				
2994.21(5)	⟨1–5^+⟩											26(3)	
3014.69(24)	⟨17^-⟩												
3040.31(8)	⟨3^-,5^+⟩												
3051.14(9)	⟨1^+–5^+⟩												
3063.94(9)	⟨3,5^+⟩												47(5)
3071.94(21)	⟨17^-⟩												
3107(12)													
3132.53(6)	⟨1–5^+⟩												
3147.5(3)	⟨17^-⟩												
3168.19(18)	⟨3^+,5^+⟩	2	0.51					65Li08					
3191.52(20)	⟨1^+–5^+⟩											54(19)	
3201.4(4)	⟨17^-⟩												
3232.79(11)	⟨1,3⟩								100				
3243.92(10)	⟨1^-–5^+⟩												100
3245.56(24)	⟨19^+⟩												
3264.90(20)	⟨19^-⟩												
3268(12)	⟨3^+,5^+⟩	2	0.46					65Li08					
3312.70(12)	⟨1,3⟩												
3327.03(17)	⟨3^-,5^+⟩	⟨2⟩	0.43					65Li08					
3333.7(3)	⟨21^+⟩						0.28(+14-7) ps						
3348.63(11)	⟨1,3⟩												
3354.21(12)	⟨1,3⟩								67(5)			33(14)	
3362.23(11)	⟨1^-–5^+⟩												
3396.17(17)	⟨1–5^+⟩												
3403.98(19)	⟨19^-⟩												
3409.6(4)	⟨19^+⟩												
3412.44(10)	⟨1,3⟩								53(6)				
3415.02(6)	⟨1,3⟩								56(6)				
3439.70(20)	⟨19^-⟩												
3450.42(14)	⟨3^+,5^+⟩	2	0.36					65Li08				100	
3472.0(3)	⟨19^-⟩												
3472.82(14)	⟨1–5^+⟩												

(continued)

$^{77}_{34}$Se

E^* [keV]	$2J^\pi$	L	S' (d,p)	L	$S_{\ell j}$ (p,d)	σ (d,t) μb/sr	$T_{1/2}$ or Γ_{cm}	Ref.	Branching ratios in percentage E^*_f: / $2J^\pi_f$:	0.0 1^-	162 7^+	175.3 9^+	239 3^-	250 5^-
3480.51(13)	$\langle 1–5^+\rangle$												33(2)	
3517.90(10)	$\langle 3^+\rangle$									45(3)				
3545.68(10)	$\langle 3^+,5^+\rangle$	2	0.28					78Mo12			28(3)			
3552.44(10)	$\langle 3^-\rangle$													
3560.64(9)	$\langle 1–5^+\rangle$													
3641.4(5)	$\langle 19^-\rangle$													
3642.23(16)	$\langle 5^+\rangle$											67(4)		
3694.41(24)	$\langle 3^+,5^+\rangle$	2	0.13					65Li08						
3718.48(10)	$\langle 1^–5^+\rangle$													
3764.78(18)	$\langle 21^-\rangle$													
3772.40(16)	$\langle 5^+\rangle$													
3798.20(15)	$\langle 3^+,5^+\rangle$	2	0.21					78Mo12			60(4)		8(2)	
3827.10(24)	$\langle 1–5^+\rangle$													
3864.6(3)	$\langle 21^+\rangle$													
3868.66(13)	$\langle 5^+\rangle$	2	0.19					78Mo12				52(3)	29(2)	
3880.0(4)	$\langle 21^-\rangle$													
3885.1(4)	$\langle 21^+\rangle$													
3935.12(14)	$\langle 3^-,5^+\rangle$													
3988.5(9)	$\langle 21^-\rangle$													
4068.49(16)	$\langle 5^+\rangle$	2	0.20					78Mo12					9(2)	
4180.3(3)	$\langle 23^+\rangle$													
4212.19(20)	$\langle 1–5^+\rangle$	2	0.39					65Li08						
4243.63(12)			incl					65Li08		37(2)				
4288.44(15)	$\langle 1,3\rangle$									47(3)				
4301.69(23)	$\langle 23^-\rangle$													
4321.0(3)	$\langle 23^-\rangle$													
4340	$\langle 3^+,5^+\rangle$	2	0.23					78Mo12						
4391.9(20)	$\langle 23^-\rangle$													
4430	$\langle 3^+,5^+\rangle$	2	0.24					78Mo12						
4531.8(4)	$\langle 23^+\rangle$													
4625.8(4)	$\langle 25^+\rangle$						0.21(+14-7) ps							
4640		$\langle 2\rangle$	0.21					78Mo12						
4670.5(7)	$\langle 23^+\rangle$													
4750		$\langle 2\rangle$	0.10					78Mo12						
4846.9(4)	$\langle 25^-\rangle$													
4862.3(4)	$\langle 25^+\rangle$													
5001.4(21)	$\langle 25^-\rangle$													
5258.9(5)	$\langle 27^+\rangle$													
5584(3)	$\langle 27^-\rangle$													
5941.4(15)	$\langle 29^+\rangle$													

(continued) **$^{77}_{34}$Se**

E^*	$2J^\pi$	L	S'	L	$S_{\ell j}$	σ (d,t)	$T_{1/2}$ or	Ref.	Branching ratios in percentage					
									E^*_f:	0.0	162	175.3	239	250
[keV]			(d,p)		(p,d)	μb/sr	Γ_{cm}		$2J^\pi_f$:	1^-	7^+	9^+	3^-	5^-
6654.9(21)	$\langle 31^+ \rangle$													
			78Mo12		79Ba61	65Li08		Ref.						

Abundance: 7.63(16) %.
* Assuming L–1/2 [79Ba61, 97Fa12].
$S_{\ell j}$ for the (p,d) reaction were derived from the relation $d\sigma/d\Omega_{exp}$=2.29$S_{\ell j}(2j+1)^{-1}d\sigma/d\Omega_{DWBA}$ [79Ba61].

Energy levels and branching ratios [97Fa12]. Part 2 **$^{77}_{34}$Se**

E^*	$2J^\pi$					Branching ratios in percentage						
		E^*_f:	301	439	521	581.0	680.1	796.1	808.2	817.9	824.4	911.5
[keV]		$2J^\pi_f$:	5^+	5^-	3^-	7^-	5^+	$7^{\langle + \rangle}$	7^-	1^-	$\langle 5 \rangle^-$	$\langle 3 \rangle^+$
520.639(1)	3^-			0.06(1)								
581.011(2)	7^-		1.1(2)	2.6(7)								
680.105(2)	5^+		7.0(5)	0.28(2)	1.24(6)	0.7(2)						
796.152(4)	$7^{\langle + \rangle}$		51(3)									
808.185(3)	7^-			49(3)								
817.856(2)	1^-			0.60(4)	41(1)							
824.431(2)	$\langle 5 \rangle^-$		0.9(1)	16(2)	24(1)	0.9(4)	0.12(2)					
911.531(2)	$\langle 3 \rangle^+$		15(1)	5.4(6)	13(1)		45(2)					
946.983(2)	1^+		48(2)		1.23(10)		1.39(8)					
978.30(10)	9^-			10(2)		11(2)						
999.2(7)					x							
1005.184(2)	3^-		0.41(4)	9.3(6)	22.3(8)	0.44(4)	0.48(3)			1.32(5)	6.3(2)	
1128.113(3)	1^+		1.2(2)		41(2)							0.7(1)
1132.458(4)			53(4)				8.6(9)					
1172.48(16)	9^-			82(1)					17.7(21)			
1179.3(7)	$\langle 5\text{–}9^- \rangle$			100								
1186.984(2)	$\langle 3 \rangle$		66(8)	3.2(3)	5.1(3)		1.2(3)				0.82(4)	1.2(1)
1193.1(4)	$\langle 9^+ \rangle$		70(6)					30(6)				
1230.624(6)	$\langle 5 \rangle^-$		10(1)	24(2)		9.2(11)						
1252.965(5)	5^+		67(11)		9.6(7)	7.4(8)	15.7(13)					
1282.8(4)	$\langle 7^- \rangle$			70(41)					30(18)			
1351.57(12)	$\langle 11^- \rangle$					87(3)			4(3)			
1364.274(4)	$\langle 3^-,5^+ \rangle$		63(6)		18(2)		7.8(4)		1.9(3)			1.6(2)
1402.486(3)	$\langle 3^- \rangle$			7(1)	13(1)			0.35(5)		1.6(1)		0.26(2)
1411.626(4)	$\langle 3^- \rangle$			1.9(3)	19(3)	4.7(4)	0.49(4)	0.09(6)	0.71(6)	2.1(2)	1.3(1)	
1488.237(4)	$1^-,3^-$			13(2)	17(2)		7.6(4)	0.3(1)	0.2(1)	5.7(3)	5.0(3)	0.2(1)
1511.024(3)	$\langle 3 \rangle$		2.0(4)	14(2)	25(2)	4.6(3)		0.22(5)		1.8(1)	2.8(1)	10(1)
1607.701(8)	$\langle 3,5^+ \rangle$		70(8)	5.6(8)		4.0(3)	7.4(9)	1.23(10)	2.2(2)		1.19(12)	1.9(1)
1616.58(21)	$\langle 11^- \rangle$								82(18)			
1620.5(7)	$\langle 11^+ \rangle$							100				

(continued) **$^{77}_{34}$Se**

E^*	$2J^\pi$		Branching ratios in percentage									
		E_f^*:	301	439	521	581.0	680.1	796.1	808.2	817.9	824.4	911.5
[keV]		$2J_f^\pi$:	5^+	5^-	3^-	7^-	5^+	$7^{\langle+\rangle}$	7^-	1^-	$\langle5\rangle^-$	$\langle3\rangle^+$
1623.144(5)	$\langle1^-\rangle$			0.8(3)						4.0(3)	0.25(7)	7.9(4)
1714.749(8)	$1^-,3^-$			2(1)	21(2)					10(1)	6.2(5)	1.1(2)
1817.637(6)	1^-			15(1)	69(6)				0.52(16)	1.4(1)	0.62(12)	
1830.863(12)	$\langle1^-,3\rangle$			15(2)	17(3)							
1888.67(4)			26(3)				36(3)					
1916.064(11)	$\langle1^+,3\rangle$		4(1)		24(1)						25(3)	
2212.14(3)	$1^-,3^-$				12(2)						9.5(8)	
2264.43(6)	$\langle3^-\rangle$		53(5)						9(2)	18(3)		
2320.13(20)	$\langle1^+–5^+\rangle$		31(12)									69(8)
2339.94(5)	$\langle3^-,5^+\rangle$					24(8)						
2393.012(23)	3^-				38(5)		19(2)		16(3)			
2455.449(10)	$\langle1^+–5^+\rangle$						15(7)					
2491.92(5)	$\langle1–5^-\rangle$		49(5)							13(8)		
2551.90(8)	$\langle3^-\rangle$					40(5)			21(3)			
2640.967(24)	$\langle3^+,5^+\rangle$											42(6)
2716.32(7)	$\langle1^+–5^+\rangle$		24(4)									
2776.77(4)	$\langle1^-,3\rangle$									16(4)		
2853.09(5)	$\langle1^-,3^-\rangle$									30(2)	6(1)	
2891.94(4)	$\langle3^-\rangle$		35(3)							29(2)		20(2)
3040.31(8)	$\langle3^-,5^+\rangle$			55(5)		22(3)	23(5)					
3051.14(9)	$\langle1^+–5^+\rangle$		42(5)									21(4)
3063.94(9)	$\langle3,5^+\rangle$		53(5)									
3132.53(6)	$\langle1–5^+\rangle$										24(5)	
3168.19(18)	$\langle3^+,5^+\rangle$											100
3312.70(12)	$\langle1,3\rangle$									11(4)		
3327.03(17)	$\langle3^-,5^+\rangle$					100						
3362.23(11)	$\langle1^-–5^+\rangle$			54(5)								
3472.82(14)	$\langle1–5^+\rangle$				100							
3480.51(13)	$\langle1–5^+\rangle$				26(2)							
3517.90(10)	$\langle3^+\rangle$		18(2)						14(2)			
3545.68(10)	$\langle3^+,5^+\rangle$			13(2)								
3552.44(10)	$\langle3^-\rangle$		33(4)			33(8)						
3560.64(9)	$\langle1–5^+\rangle$				50(3)							23(5)
3642.23(16)	$\langle5^+\rangle$		33(5)									
3694.41(24)	$\langle3^+,5^+\rangle$						100					
3718.48(10)	$\langle1^-–5^+\rangle$			38(8)							31(5)	
3772.40(16)	$\langle5^+\rangle$				36(4)				64(5)			
3798.20(15)	$\langle3^+,5^+\rangle$											33(4)
3868.66(13)	$\langle5^+\rangle$										19(2)	
3935.12(14)	$\langle3^-,5^+\rangle$					41(3)					45(4)	
4068.49(16)	$\langle5^+\rangle$					50(4)			41(7)			
4243.63(12)									18(2)			

Energy levels and branching ratios [97Fa12]. Part 3

$^{77}_{34}$Se

E^*	$2J^\pi$		Branching ratios in percentage									
		E^*_f:	947.0	970.0	978.3	1005.2	1024.1	1126.6	1128.1	1172.5	1187.0	1230.6
[keV]		$2J^\pi_f$:	1^+	$\langle 11^+\rangle$	9^-	3^-	$\langle 13^+\rangle$	$\langle 11^+\rangle$	1^+	9^-	$\langle 3\rangle$	$\langle 5\rangle^-$
1128.113(3)	1^+		1.0(4)									
1186.984(2)	$\langle 3\rangle$		5.9(7)									
1351.57(12)	$\langle 11^-\rangle$				7(3)					1.8(9)		
1364.274(4)	$\langle 3^-,5^+\rangle$										1.8(3)	
1402.486(3)	$\langle 3^-\rangle$		2.1(3)			11.7(6)			0.92(5)			
1411.626(4)	$\langle 3^-\rangle$		0.10(1)			0.08(1)			0.07(1)			
1488.237(4)	$1^-,3^-$					14(2)			0.7(1)			
1511.024(3)	$\langle 3\rangle$		3.1(4)			6(1)					0.99(6)	
1607.701(8)	$\langle 3,5^+\rangle$		1.7(1)									
1616.58(21)	$\langle 11^-\rangle$									18(8)		
1623.144(5)	$\langle 1^-\rangle$		1.3(1)									
1714.749(8)	$1^-,3^-$					2.1(1)					0.36(6)	
1721.94(19)	$\langle 13^+\rangle$			73(7)			12(4)	15(4)				
1817.637(6)	1^-					0.67(4)			0.88(5)		0.062(10)	
1830.863(12)	$\langle 1^-,3\rangle$		7(3)			2.8(7)						
1886.52(17)	13^-			7(3)	90(4)							
1916.064(11)	$\langle 1^+,3\rangle$		1.8(2)									
2055.45(22)	$\langle 15^+\rangle$			48(13)			52(13)					
2092.09(19)	$\langle 13^-\rangle$									87(5)		
2103.37(21)	$\langle 17^+\rangle$						100					
2142.60(7)	$\langle 1–5^-\rangle$					8.1(9)						
2212.14(3)	$1^-,3^-$								11(2)		12.8(10)	
2240.22(22)	$\langle 15^+\rangle$						18(6)	82(6)				
2248.923(7)	$3^+,5^+$		21(2)									
2264.43(6)	$\langle 3^-\rangle$		20(2)									
2339.94(5)	$\langle 3^-,5^+\rangle$		46(3)									
2455.449(10)	$\langle 1^+–5^+\rangle$					60(15)						
2551.90(8)	$\langle 3^-\rangle$		18(2)								3(2)	17(1)
2553.84(9)	$\langle 1–5^+\rangle$		36(5)								49(5)	
2640.967(24)	$\langle 3^+,5^+\rangle$					24(3)						
2716.32(7)	$\langle 1^+–5^+\rangle$										64(10)	6.6(12)
2776.77(4)	$\langle 1^-,3\rangle$					18(6)						
2809.10(9)	$\langle 1,3\rangle$					27(3)						
2853.09(5)	$\langle 1^-,3^-\rangle$					31(3)						
2872.98(7)	$\langle 3\rangle$								5.9(12)			
3132.53(6)	$\langle 1–5^+\rangle$										36(12)	
3312.70(12)	$\langle 1,3\rangle$					38(8)		11(4)			40(8)	
3348.63(11)	$\langle 1,3\rangle$										48(7)	
3362.23(11)	$\langle 1^-–5^+\rangle$											31(4)
3480.51(13)	$\langle 1–5^+\rangle$											41(4)
3545.68(10)	$\langle 3^+,5^+\rangle$								39(5)			
3935.12(14)	$\langle 3^-,5^+\rangle$		14(3)									
4212.19(20)	$\langle 1–5^+\rangle$		100									
4243.63(12)			45(5)									
4288.44(15)	$\langle 1,3\rangle$					32(17)			21.3(11)			

Energy levels and branching ratios [97Fa12]. Part 4 **$^{77}_{34}$Se**

E^*	$2J^\pi$	Branching ratios in percentage									
	E_f^*:	1253.0	1351.6	1364.3	1402.5	1411.6	1488.2	1511.0	1607.7	1616.6	1620.5
[keV]	$2J_f^\pi$:	5^+	$\langle 11^- \rangle$	$\langle 3^-,5^+ \rangle$	$\langle 3^- \rangle$	$\langle 3^- \rangle$	$1^-,3^-$	$\langle 3 \rangle$	$\langle 3,5^+ \rangle$	$\langle 11^- \rangle$	$\langle 11^+ \rangle$
1817.637(6)	1^-						0.31(5)				
1830.863(12)	$\langle 1^-,3 \rangle$							1.1(2)			
1886.52(17)	13^-		2.9(14)								
1916.064(11)	$\langle 1^+,3 \rangle$				0.8(1)		0.27(4)	0.5(1)			
1998.6(10)			100								
2092.09(19)	$\langle 13^- \rangle$		9(4)							4(3)	
2212.14(3)	$1^-,3^-$						1.6(2)				
2248.923(7)	$3^+,5^+$			10(3)				33(2)			
2264.16(6)	$\langle 15^- \rangle$		97(6)								
2264.43(6)	$\langle 3^- \rangle$						0.6(2)				
2339.94(5)	$\langle 3^-,5^+ \rangle$			8.4(4)							
2393.012(23)	3^-	7(1)				9.1(9)					
2491.92(5)	$\langle 1–5^- \rangle$						18(4)				
2553.84(9)	$\langle 1–5^+ \rangle$					15(4)					
2579.8(10)	$\langle 15^+ \rangle$										100
2611.17(23)	$\langle 15^- \rangle$									100	
2640.967(24)	$\langle 3^+,5^+ \rangle$				33(4)						
2716.32(7)	$\langle 1^+–5^+ \rangle$						5.3(9)				
2776.77(4)	$\langle 1^-,3 \rangle$					15(2)					
2818.3(4)	$\langle 15^- \rangle$		15(12)							85(42)	
2869.3(4)	$\langle 15^- \rangle$									33(20)	
2872.98(7)	$\langle 3 \rangle$	14(2)				9.7(14)					
2891.94(4)	$\langle 3^- \rangle$				4(1)				12(1)		
2994.21(5)	$\langle 1–5^+ \rangle$						51(5)				
3051.14(9)	$\langle 1^+–5^+ \rangle$							27(4)			
3191.52(20)	$\langle 1^+–5^+ \rangle$	46(6)									
3348.63(11)	$\langle 1,3 \rangle$							30(4)			
3362.23(11)	$\langle 1^–5^+ \rangle$							15(4)			
3396.17(17)	$\langle 1–5^+ \rangle$								100		
3517.90(10)	$\langle 3^+ \rangle$	23(4)									
3718.48(10)	$\langle 1^–5^+ \rangle$								31(3)		

Energy levels and branching ratios [97Fa12]. Part 5 **$^{77}_{34}$Se**

E^*	$2J^\pi$	Branching ratios in percentage									
	E_f^*:	1623.1	1714.7	1721.9	1817.6	1886.5	1888.7	2055.4	2092.1	2103.4	2142.6
[keV]	$2J_f^\pi$:	$\langle 1^- \rangle$	$1^-,3^-$	$\langle 13^+ \rangle$	1^-	13^-		$\langle 15^+ \rangle$	$\langle 13^- \rangle$	$\langle 17^+ \rangle$	
2264.16(6)	$\langle 15^- \rangle$					3.1(23)					
2393.012(23)	3^-		0.3(2)								
2455.449(10)	$\langle 1^+–5^+ \rangle$		26(2)								
2551.90(8)	$\langle 3^- \rangle$				0.9(4)						
2776.77(4)	$\langle 1^-,3 \rangle$				7(1)						

(continued) **$^{77}_{34}$Se**

E^*	$2J^\pi$	Branching ratios in percentage									
	E_f^*:	1623.1	1714.7	1721.9	1817.6	1886.5	1888.7	2055.4	2092.1	2103.4	2142.6
[keV]	$2J_f^\pi$:	$\langle 1^- \rangle$	$1^-,3^-$	$\langle 13^+ \rangle$	1^-	13^-		$\langle 15^+ \rangle$	$\langle 13^- \rangle$	$\langle 17^+ \rangle$	
2789.6(3)	$\langle 17^+ \rangle$			100							
2853.09(5)	$\langle 1^-,3^- \rangle$	<4									
2864.46(21)	$\langle 17^- \rangle$					100					
2869.3(4)	$\langle 15^- \rangle$								67(40)		
2966.79(17)	$\langle 17^- \rangle$								48(14)		
2994.21(5)	$\langle 1–5^+ \rangle$						12(1)				
3014.69(24)	$\langle 17^- \rangle$					90(11)			10(6)		
3051.14(9)	$\langle 1^+–5^+ \rangle$		10(1)								
3071.94(21)	$\langle 17^- \rangle$					12(7)			62(12)		
3132.53(6)	$\langle 1–5^+ \rangle$		40(3)								
3147.5(3)	$\langle 17^- \rangle$								100		
3245.56(24)	$\langle 19^+ \rangle$							48(10)		52(7)	
3333.7(3)	$\langle 21^+ \rangle$									100	
3348.63(11)	$\langle 1,3 \rangle$				22(3)						
3412.44(10)	$\langle 1,3 \rangle$		29(4)		18(3)						
3439.70(20)	$\langle 19^- \rangle$									17(10)	
3545.68(10)	$\langle 3^+,5^+ \rangle$		20(2)								
3552.44(10)	$\langle 3^- \rangle$		35(5)								
3560.64(9)	$\langle 1–5^+ \rangle$										27(2)
3885.1(4)	$\langle 21^+ \rangle$									54(21)	

Energy levels and branching ratios [97Fa12]. Part 6 **$^{77}_{34}$Se**

E^*	$2J^\pi$	Branching ratios in percentage									
	E_f^*:	2212.1	2240.2	2264.2	2264.4	2339.9	2373.4	2611.2	2789.6	2818.3	2864.5
[keV]	$2J_f^\pi$:	$1^-,3^-$	$\langle 15^+ \rangle$	$\langle 15^- \rangle$	$\langle 3^- \rangle$	$\langle 3^-,5^+ \rangle$	$\langle 3^+,5^+ \rangle$	$\langle 15^- \rangle$	$\langle 17^+ \rangle$	$\langle 15^- \rangle$	$\langle 17^- \rangle$
2966.79(17)	$\langle 17^- \rangle$			22(8)				14(8)			16(8)
2994.21(5)	$\langle 1–5^+ \rangle$						10(2)				
3071.94(21)	$\langle 17^- \rangle$			26(17)							
3201.4(4)	$\langle 17^- \rangle$									42(25)	
3264.90(20)	$\langle 19^- \rangle$			100							
3403.98(19)	$\langle 19^- \rangle$			9(4)							29(6)
3409.6(4)	$\langle 19^+ \rangle$		100								
3415.02(6)	$\langle 1,3 \rangle$				22(2)	22(3)					
3439.70(20)	$\langle 19^- \rangle$										22(7)
3472.0(3)	$\langle 19^- \rangle$			27(15)				27(15)			34(12)
3641.4(5)	$\langle 19^- \rangle$							100			
3764.78(18)	$\langle 21^- \rangle$										27(8)
3827.10(24)	$\langle 1–5^+ \rangle$	100									
3880.0(4)	$\langle 21^- \rangle$										85(40)
3885.1(4)	$\langle 21^+ \rangle$								46(25)		

Energy levels and branching ratios [97Fa12]. Part 7 **$^{77}_{34}$Se**

E^*	$2J^\pi$	Branching ratios in percentage									
	E_f^*:	2869.3	2966.8	3014.7	3071.9	3147.5	3201.4	3245.6	3264.9	3333.7	3404.0
[keV]	$2J_f^\pi$:	$\langle 15^- \rangle$	$\langle 17^- \rangle$	$\langle 17^- \rangle$	$\langle 17^- \rangle$	$\langle 17^- \rangle$	$\langle 17^- \rangle$	$\langle 19^+ \rangle$	$\langle 19^- \rangle$	$\langle 21^+ \rangle$	$\langle 19^- \rangle$
3201.4(4)	$\langle 17^- \rangle$	58(33)									
3403.98(19)	$\langle 19^- \rangle$		14(6)	40(9)			8(4)				
3439.70(20)	$\langle 19^- \rangle$		16(9)	12(6)		12(6)	22(15)				
3472.0(3)	$\langle 19^- \rangle$				12(7)						
3764.78(18)	$\langle 21^- \rangle$				4(2)	6(3)			6(3)		21(7)
3864.6(3)	$\langle 21^+ \rangle$							20(11)		80(25)	
3880.0(4)	$\langle 21^- \rangle$										15(9)
3988.5(9)	$\langle 21^- \rangle$			100							
4180.3(3)	$\langle 23^+ \rangle$							16(7)		71(36)	
4301.69(23)	$\langle 23^- \rangle$								47(12)		
4321.0(3)	$\langle 23^- \rangle$								40(15)		
4391.9(20)	$\langle 23^- \rangle$								100		
4531.8(4)	$\langle 23^+ \rangle$							28(18)		72(36)	
4625.8(4)	$\langle 25^+ \rangle$									92(39)	
4862.3(4)	$\langle 25^+ \rangle$									15(9)	

Energy levels and branching ratios [97Fa12]. Part 8 **$^{77}_{34}$Se**

E^*	$2J^\pi$	Branching ratios in percentage										
	E_f^*:	3409.6	3439.7	3472.0	3764.8	3864.6	3880.0	4180.3	4321.0	4391.9	4625.8	5258.9
[keV]	$2J_f^\pi$:	$\langle 19^+ \rangle$	$\langle 19^- \rangle$	$\langle 19^- \rangle$	$\langle 21^- \rangle$	$\langle 21^+ \rangle$	$\langle 21^- \rangle$	$\langle 23^+ \rangle$	$\langle 23^- \rangle$	$\langle 23^- \rangle$	$\langle 25^+ \rangle$	$\langle 27^+ \rangle$
3764.78(18)	$\langle 21^- \rangle$		20(7)	16(11)								
4180.3(3)	$\langle 23^+ \rangle$					13(7)						
4301.69(23)	$\langle 23^- \rangle$				53(12)							
4321.0(3)	$\langle 23^- \rangle$				60(15)							
4625.8(4)	$\langle 25^+ \rangle$							8(6)				
4670.5(7)	$\langle 23^+ \rangle$	100										
4846.9(4)	$\langle 25^- \rangle$				40(20)				60(25)			
4862.3(4)	$\langle 25^+ \rangle$					7(4)		61(12)			18(9)	
5001.4(21)	$\langle 25^- \rangle$						100					
5258.9(5)	$\langle 27^+ \rangle$							24(15)			76(19)	
5584(3)	$\langle 27^- \rangle$									100		
5941.4(15)	$\langle 29^+ \rangle$										68(29)	32(22)
6654.9(21)	$\langle 31^+ \rangle$											100

Energy levels and branching ratios [91Ra06]. **$^{78}_{34}$Se**

E^* [keV]	J^π	L (d,p)	S'' (d,p)	S' (d,p)	σ (d,p) μb/sr	L (t,p)	σ (t,p) μb/sr	ε (t,p)	$T_{1/2}$ or Γ_{cm}	Ref.
0.0	0^+	1	0.34	0.17	1210	0	2444(122)	3.23	Stable	65Li08
613.727(3)	2^+	1	0.074	0.019	320	2	58(3)	2.33	9.7(3) ps	65Li08
1308.644(5)	2^+	⟨3⟩	0.27	0.045	120	2	15(2)	0.61	4.2(3) ps	65Li08
1498.599(9)	0^+	1	0.036	0.0018	150	weak	34(4)		1.8(3) ps	65Li08
1502.824(13)	4^+		incl						1.05(5) ps	65Li08
1758.692(17)	0^+									
1853.926(12)	3^+	3	0.1	0.02	40				1.2(4) ps	65Li08
1995.899(8)	2^+					2	9(1)	0.25	4.6(+32-14) ps	87Wa05
2190.65(19)	4^+								0.7(3) ps	
2267.07(12)										
2299.8(5)	$1,2^{\langle+\rangle}$									
2327.325(19)	2^+								0.28(+13-8) ps	
2335.21(5)	0^+	1	0.081		350	0	71(4)	0.06		65Li08
2361.85(14)	$\langle 0^+\rangle$		incl			0				87Wa05
2507.32(5)	3^-					3	62(3)	0.08	6.2(14) ps	87Wa05
2536.95(4)	2^+					2	8(1)	0.31	0.055(7) ps	87Wa05
2546.4(4)										
2546.48(15)	6^+								0.49(14) ps	
2560	$\langle 1^-–3^-\rangle$	⟨2⟩	0.031	0.006	100					65Li08
2629.6(5)										
2647.47(1)	$\langle 1,2\rangle^+$									
2682.11(2)	4^+					4	7(1)	0.34		87Wa05
2719.3(5)										
2735.0(6)	$\langle 5^+\rangle$								0.62(21) ps	
2742.52(14)	4^-								0.42(14) ns	
2753.03(18)	0^+					0	38(3)	0.03		87Wa05
2753.2(2)	2^+									
2838.48(7)	$\langle 2^+\rangle$									
2864.12(7)										
2889.90(11)	5^-					5	16(2)	0.08	18(5) ps	87Wa05
2898.14(6)	2									
2914.7(5)	4^+					4	29(2)	1.50	0.24(8) ns	87Wa05
2949.20(16)	4^-	4	0.61	0.061	210				>1.4 ps	65Li08
3003(9)	3^-					3	18(2)	0.02		87Wa05
3005.66(12)	$1,2^+$									
3013.95(13)	6^-						13(1)		3.0(5) ns	
3039.81(6)										
3048.6(10)	$\langle 3^-\rangle$									
3061(12)							21(2)			
3088.7(21)	5^-					5+6	52(3)			87Wa05
3089.72(11)	$\langle 0^+\rangle$					0+4	incl			87Wa05
3130	$0^+–2^+$	1	0.40		1940					65Li08
3133.3(5)	3^-					3	5(1)	<0.01		
3139.7(15)	4^+									
3140.2(4)	$\langle 6^+\rangle$								0.28(7) ps	

(continued) **$^{78}_{34}$Se**

E^* [keV]	J^π	L (d,p)	S'' (d,p)	S' (d,p)	σ (d,p) μb/sr	L (t,p)	σ (t,p) μb/sr	ε (t,p)	$T_{1/2}$ or Γ_{cm}	Ref.
3144.46(11)	3^-									
3181.9(5)	$\langle 1^+,2^+\rangle$					2	11(1)	0.48		87Wa05
3186.47(11)										
3229.71(13)	$\langle 1^-$–$3\rangle$									
3242.82(11)	2^+									
3254.38(12)	$\langle 0$–$2\rangle^+$									
3288.28(6)	1^-					1	320(2)	0.03		87Wa05
3294.36(23)	4^+					4	8(1)	0.45		87Wa05
3306.79(16)	6^-								11(4) ps	
3309.9(20)										
3329(10)		1+4	0.04+0.6		210					65Li08
3372.6(3)	3^-									
3383.64(10)										
3386.0(5)	2^+									
3391(8)	$\langle 5^-\rangle$					$\langle 5\rangle$	10(1)	0.03		87Wa05
3411.29(18)	3^-					[3]	9(1)	0.03		87Wa05
3439.45(14)	$\langle 1\rangle$									
3450.83(10)	0^+					0	86(4)	0.07		87Wa05
3453(4)	3^-	$\langle 4\rangle$	1.65	0.17	590					65Li08
3488.2(6)									0.12(4) ps	
3494.38(8)	$1,2^{\langle +\rangle}$									
3496.26(11)										
3522.94(22)	7^-									
3523.81(14)	$1,2^{\langle +\rangle}$	$\langle 2\rangle$	0.88	0.15	490					65Li08
3527(14)	1^-					1	134(7)	0.07		87Wa05
3546(4)	$\langle 2^-$–$4^-\rangle$									
3550.14(24)	$\langle 7^-\rangle$								3.5(21) ps	
3585.0(3)	8^+								0.42(14) ps	
3591.66(11)	$\langle 1^-\rangle$					1	54(3)	0.05		87Wa05
3603.8(10)	2^+									
3624.10(14)	$1,2^{\langle +\rangle}$					2	25(2)	0.82		87Wa05
3628.1(5)										
3632.2(4)	$\langle 1^+,2^+\rangle$									
3686.52(16)	3^-	2	0.38	0.064	1260	3	22(2)	0.03		65Li08
3704.0(8)	$\langle 7^+\rangle$								0.83(21) ps	
3711.3(5)	$\langle 1$–$3\rangle$									
3735.15(12)										
3754(15)							7(1)			
3774(4)	3^-					3	34(2)	0.04		
3830	1^-–3^-	2	0.34	0.057	1120					65Li08
3830.6(3)	8^+								0.55(14) ps	
3881(4)	3^-									
3894.58(12)	2^+					2	12(1)	0.56		87Wa05
3933(9)	2^+					2	9(1)	0.29		87Wa05
3959.84(16)	$1,2^{\langle +\rangle}$									

(continued) **$^{78}_{34}$Se**

E^* [keV]	J^π	L (d,p)	S'' (d,p)	S' (d,p)	σ (d,p) μb/sr	L (t,p)	σ (t,p) μb/sr	ε (t,p)	$T_{1/2}$ or Γ_{cm}	Ref.
3995(4)	5^-									
3999.14(12)	1^-					1	11(1)	0.01		87Wa05
4037.02(12)						1+3	34(2)	≈0.02		87Wa05
4038(10)										
4048.0(6)	8^-								0.9(3) ps	
4050(4)	$\langle 5^- \rangle$									
4079.86(13)	$1,2^{\langle + \rangle}$									
4106(12)	1^-					1	55(3)	0.05		87Wa05
4120	$0^-,1^-$	0	0.68	0.34	1740					65Li08
4121.1(3)	8^+									
4122(4)	4^+					4	15(2)	0.82		87Wa05
4153.10(16)	$\langle 1 \rangle$						5(1)			
4155(4)	3^-									
4182.02(11)	0^+					0	45(3)	0.04		87Wa05
4190	$0^-,1^-$	0	0.89	0.44	2250					65Li08
4214.1(4)	$\langle 8^- \rangle$								>1.4 ps	
4224(10)	3^-					3	13(1)	0.02		87Wa05
4245.4(5)	$\langle 1 \rangle$									
4253.11(12)	$\langle 2^+ \rangle$					2	63(3)			87Wa05
4253.64(17)	$\langle 5^- \rangle$					5	incl			87Wa05
4265(10)	0^+					0	111(2)	0.10		87Wa05
4297.48(12)	2^+					2	36(2)	1.42		87Wa05
4341.53(11)	$1,2^{\langle + \rangle}$									
4345(11)	3^-					3	133(1)	0.02		87Wa05
4366.56(11)	$\langle 1 \rangle^-$	2	0.57	0.095	2380	1	23(2)	≈0.01		65Li08
4369(11)	$\langle 3^- \rangle$		incl			3	incl			87Wa05
4386.92(11)	$\langle 1,2^+ \rangle$									
4409(11)	2^+					2	38(2)	1.42		87Wa05
4412.05(24)	$\langle 9^- \rangle$									
4424(4)	$\langle 2^+ \rangle$									
4448.46(12)	$1,2^{\langle + \rangle}$					0	39(3)			87Wa05
4451(11)	$\langle 0^+,3^- \rangle$					3	incl			87Wa05
4469.00(17)	$1,2^{\langle + \rangle}$									
4483(11)	4^+					4	11(1)	0.49		87Wa05
4493(4)	$\langle 3 \rangle^-$	2	0.76	0.13	3300					65Li08
4509(11)	2^+					2	20(2)	0.83		87Wa05
4528.76(19)										
4557(4)										
4569(11)	$\langle 0^+,4^+ \rangle$					0+4	81(4)			87Wa05
4591(11)	$\langle 3 \rangle^-$	2	0.33	0.055	1370	$\langle 3 \rangle$	7(1)	0.01		65Li08
4616(11)	4^+					4	13(1)	0.58		87Wa05
4622(4)	5^-									
4625.0(5)	$\langle 10^+ \rangle$									
4639(11)	3^-					3	13(1)	0.01		87Wa05
4672.50(18)										

(continued) **$^{78}_{34}$Se**

E^* [keV]	J^π	L (d,p)	S'' (d,p)	S' (d,p)	σ (d,p) μb/sr	L (t,p)	σ (t,p) μb/sr	ε (t,p)	$T_{1/2}$ or Γ_{cm}	Ref.
4684.29(14)										
4690.31(19)	$1,2^{\langle+\rangle}$					2	36(2)	1.56		87Wa05
4696.99(12)	$1,2^{\langle+\rangle}$									
4723.02(14)	2^+					2	47(2)	1.67		87Wa05
4758(11)	4^+					4	14(1)	0.63		87Wa05
4786.9(5)	$\langle 10^+\rangle$								>1.4 ps	
4787.93(16)	$\langle 1^-\rangle$	0	0.31	0.15	870					65Li08
4791.2(4)	0^+					0	114(6)	0.10		87Wa05
4811.96(18)	2^+					2	12(2)	0.10		87Wa05
4819.2(6)	$\langle 9^-\rangle$								0.9(3) ps	
4856.9(9)	$\langle 9^+\rangle$								1.1(4) ps	
4857(11)	1^-					1	36(2)	0.04		87Wa05
4879(11)	3^-					3	25(2)	0.03		87Wa05
4902(4)	3^-	2	0.28	0.047	1290					65Li08
4904(10)	2^+					2	22(2)	0.85		87Wa05
4944(11)	2^+					2	21(2)	0.85		87Wa05
4957.22(24)	$1,2^{\langle+\rangle}$									
4972.35(22)	1^-	2	0.45	0.075	1940	1	58(2)	0.05		65Li08
4998.2(3)										
5004.71(18)	$1,2^{\langle+\rangle}$									
5022.28(15)										
5029.90(19)	2^+					2	51(3)	1.68		87Wa05
5055(12)										
5090.85(22)										
5094.8(8)										
5101.3(3)										
5120	$0^-,1^-$	0	0.29	0.14	800					65Li08
5126.63(15)	$\langle 2,3,4\rangle$									
5136(15)										
5164.20(14)										
5180.58(18)	$1^{\langle+\rangle},2^{\langle+\rangle}$									
5205(15)	1^-–3^-	2	0.60	0.10	2890					65Li08
5235(15)										
5247(15)										
5290.17(17)	$1,2^{\langle+\rangle}$									
5295.3(3)	3^-									
5339.73(25)	$1,2^{\langle+\rangle}$									
5356.54(15)	$\langle 2^+\rangle$		0.27	0.045	1310					65Li08
5390.8(3)										
5422(15)										
5440.2(3)										
5451.37(25)	$1,2^{\langle+\rangle}$									
5480	$\langle 1^+$–$3^+\rangle$		0.13	0.021	630					65Li08
5513.24(16)	$1,2^{\langle+\rangle}$									
5580(15)										

(continued) **$^{78}_{34}$Se**

E^* [keV]	J^π	L (d,p)	S'' (d,p)	S' (d,p)	σ (d,p) μb/sr	L (t,p)	σ (t,p) μb/sr	ε (t,p)	$T_{1/2}$ or Γ_{cm}	Ref.
5610	2^+		0.29	0.048	1490					65Li08
5689.1(8)										
5709(15)										
5783.7(7)	$\langle 12^+ \rangle$								>0.6 ps	
5837(15)										
6161(15)										
			65Li08	65Li08	65Li08		87Wa05	87Wa05		Ref.

Additional data on this isotope can be found in [03Ha15].
Abundance: 23.77(28) %.
Parameters and cross section of neutron transfer reaction (d,p) are given first; S'' and S' are interconnected $S''=(2j+1)S'$ where j is a total angular momentum of the stripped neutron [65Li08]; see also [81Si13].
Cross section and enhancement factor ε of two-neutron transfer reaction (t,p) are given at right; enhancement factor ε is a measure of the relative transition strength and is defined by $\sigma(exp) = 230\varepsilon \times \sigma(DWBA)$ [87Wa05].

Energy levels and branching ratios [91Ra06]. Part 2 **$^{78}_{34}$Se**

E^*	J^π		Branching ratios in percentage									
		E_f^*:	0.0	614	1309	1499	1503	1759	1854	1996	2190.6	2267.1
[keV]		J_f^π:	0^+	2^+	2^+	0^+	4^+	0^+	3^+	2^+	4^+	
613.727(3)	2^+		100									
1308.644(5)	2^+		42.9(4)	57.1(11)								
1498.599(9)	0^+			100								
1502.824(13)	4^+			100								
1758.692(17)	0^+			96(4)	3.6(4)							
1853.926(12)	3^+			65(7)	33(5)		1.8(3)					
1995.899(8)	2^+		44(2)	26(2)	25(2)	5(1)						
2190.65(19)	4^+			[19]			[81]					
2267.07(12)				61(5)	24(4)					15(5)		
2299.8(5)	$1,2^{\langle + \rangle}$		100									
2327.325(19)	2^+		7(3)	85(5)	5.2(3)			1.9(3)		1.4(3)		
2335.21(5)	0^+			90(5)	9.7(7)							
2361.85(14)	$\langle 0^+ \rangle$			100								
2507.32(5)	3^-			13(4)	72(3)		14(3)					
2536.95(4)	2^+			76(5)	21(2)	2(1)						
2546.4(4)							9(4)					91(15)
2546.48(15)	6^+						100					
2629.6(5)							100					
2647.47(1)	$\langle 1,2 \rangle^+$				55(4)				7.8(11)	23(2)		
2682.11(2)	4^+			3.3(7)	28(2)				51(4)	6(1)		
2719.3(5)					100							

(continued) **$^{78}_{34}$Se**

E^*	J^π		Branching ratios in percentage									
		E^*_f:	0.0	614	1309	1499	1503	1759	1854	1996	2190.6	2267.1
[keV]		J^π_f:	0^+	2^+	2^+	0^+	4^+	0^+	3^+	2^+	4^+	
2735.0(6)	$\langle 5^+ \rangle$						100					
2742.52(14)	4^-						35		6		59(4)	
2753.2(2)	2^+			17(5)	48(7)	18(4)				17(4)		
2838.48(7)	$\langle 2^+ \rangle$		0.9(5)	16(2)	42(3)			19(2)		13(2)		
2864.12(7)									100			
2889.90(11)	5^-						67(3)					
2898.14(6)	2			100								
2914.7(5)	4^+						100					
2949.20(16)	4^-						30		25			
3005.66(12)	$1,2^+$		12(2)	88(10)								
3039.81(6)					60(4)				31(4)	8(3)		
3048.6(10)	$\langle 3^- \rangle$						100					
3089.72(11)	$\langle 0^+ \rangle$			100								
3133.3(5)	3^-			100								
3139.7(15)	4^+				100							
3140.2(4)	$\langle 6^+ \rangle$										62(7)	
3144.46(11)	3^-				58(4)		6(2)		4(1)			
3181.9(5)	$\langle 1^+,2^+ \rangle$		100									
3186.47(11)				100								
3229.71(13)	$\langle 1^- – 3 \rangle$			32(5)	61(15)	x						
3242.82(11)	2^+		26(4)	21(3)		7(1)		25(2)	9(1)			4(1)
3254.38(12)	$\langle 0 – 2 \rangle^+$			100								
3288.28(6)	1^-			78(12)	5.4(18)					17(2)		
3294.36(23)	4^+			53(3)			30(3)		10(3)			
3372.6(3)	3^-			50(10)	50(16)							
3383.64(10)				100								
3386.0(5)	2^+		33(9)	67(17)								
3411.29(18)	3^-			72(9)								
3439.45(14)	$\langle 1 \rangle$		100									
3450.83(10)	0^+			100								
3494.38(8)	$1,2^{\langle + \rangle}$									26(6)		
3496.26(11)					28(3)							
3523.81(14)	$1,2^{\langle + \rangle}$		100									
3591.66(11)	$\langle 1^- \rangle$			100								
3603.8(10)	2^+			100								
3624.10(14)	$1,2^{\langle + \rangle}$		100									
3628.1(5)					100							
3632.2(4)	$\langle 1^+,2^+ \rangle$		x					x	x			
3686.52(16)	3^-			100								
3711.3(5)	$\langle 1 – 3 \rangle$			100								
3735.15(12)				100								
3894.58(12)	2^+		5.5(16)				95(16)					
3959.84(16)	$1,2^{\langle + \rangle}$		54(8)	46(8)								
3999.14(12)	1^-		6(1)	31(2)				18(9)		23(9)		
4037.02(12)				100								

(continued) **$^{78}_{34}$Se**

E^*	J^π		Branching ratios in percentage									
		E_f^*:	0.0	614	1309	1499	1503	1759	1854	1996	2190.6	2267.1
[keV]		J_f^π:	0^+	2^+	2^+	0^+	4^+	0^+	3^+	2^+	4^+	
4079.86(13)	$1,2^{\langle+\rangle}$		100									
4182.02(11)	0^+				63(7)					37(15)		
4253.11(12)	$\langle 2^+\rangle$			12(2)	31(3)					57(11)		
4297.48(12)	2^+				100							
4341.53(11)	$1,2^{\langle+\rangle}$		47(4)			53(7)						
4366.56(11)	$\langle 1\rangle^-$		25(8)		75(13)							
4386.92(11)	$\langle 1,2^+\rangle$			31(3)				69(9)				
4448.46(12)	$1,2^{\langle+\rangle}$		60(13)							40(7)		
4469.00(17)	$1,2^{\langle+\rangle}$		17(4)	83(8)								
4528.76(19)					100							
4672.50(18)				100								
4684.29(14)				68(5)	32(3)							
4690.31(19)	$1,2^{\langle+\rangle}$		100									
4696.99(12)	$1,2^{\langle+\rangle}$		16(6)						84(11)			
4723.02(14)	2^+				37(5)	22(11)	41(11)					
4787.93(16)	$\langle 1^-\rangle$			58(10)	42(6)							
4791.2(4)	0^+			100								
4811.96(18)	2^+		66(9)		34(12)							
4957.22(24)	$1,2^{\langle+\rangle}$		100									
4972.35(22)	1^-		100									
4998.2(3)						100						
5004.71(18)	$1,2^{\langle+\rangle}$		10(2)	50(5)				40(12)				
5022.28(15)									100			
5029.90(19)	2^+		50(9)		50(14)							
5090.85(22)				100								
5101.3(3)				100								
5126.63(15)	$\langle 2,3,4\rangle$						38(6)		41(6)	21(4)		
5164.20(14)					68(7)					32(5)		
5180.58(18)	$1^{\langle+\rangle},2^{\langle+\rangle}$					43(6)			57(6)			
5290.17(17)	$1,2^{\langle+\rangle}$		32(5)	38(5)		30(5)						
5295.3(3)	3^-			100								
5339.73(25)	$1,2^{\langle+\rangle}$				32(4)	68(11)						
5356.54(15)	$\langle 2^+\rangle$			40(8)						60(8)		
5390.8(3)				100								
5440.2(3)				100								
5451.37(25)	$1,2^{\langle+\rangle}$					100						
5513.24(16)	$1,2^{\langle+\rangle}$		14(3)			39(6)						47(14)

Energy levels and branching ratios [91Ra06]. Part 3 **$^{78}_{34}$Se**

E^*	J^π		Branching ratios in percentage									
		E_f^*:	2327.3	2335.2	2361.8	2507.3	2536.9	2546.4	2546.5	2647.5	2682.1	2735.0
[keV]		J_f^π:	2^+	0^+	$\langle 0^+\rangle$	3^-	2^+		6^+	$\langle 1,2\rangle^+$	4^+	$\langle 5^+\rangle$
2647.47(1)	$\langle 1,2\rangle^+$		6(2)		8(3)							
2682.11(2)	4^+		11(2)			1.1(3)						
2838.48(7)	$\langle 2^+\rangle$			7.0(7)							1.6(4)	
2889.90(11)	5^-					22.3(10)		10.7(5)				
2949.20(16)	4^-					45(5)						
3013.95(13)	6^-								15.5(10)			
3140.2(4)	$\langle 6^+\rangle$								38(4)			
3144.46(11)	3^-					8(1)					24(2)	
3229.71(13)	$\langle 1^-$–$3\rangle$					7(1)						
3242.82(11)	2^+									7(1)		
3294.36(23)	4^+		5(2)				3(1)					
3306.79(16)	6^-							22.4(9)				
3411.29(18)	3^-					28(9)						
3488.2(6)									100			
3494.38(8)	$1,2^{\langle +\rangle}$			33(9)								
3496.26(11)			9(2)			7(2)	35(4)					
3522.94(22)	7^-							23(2)				
3585.0(3)	8^+							100				
3704.0(8)	$\langle 7^+\rangle$							11				89(7)
3830.6(3)	8^+								75(5)			
3999.14(12)	1^-		23(9)									
4121.1(3)	8^+								33(9)			

Energy levels and branching ratios [91Ra06]. Part 4 **$^{78}_{34}$Se**

E^*	J^π		Branching ratios in percentage								
		E_f^*:	2742.5	2838.5	2889.9	2949.2	3013.9	3306.8	3522.9	3550.1	3585.0
[keV]		J_f^π:	4^-	$\langle 2^+\rangle$	5^-	4^-	6^-	6^-	7^-	$\langle 7^-\rangle$	8^+
3013.95(13)	6^-		64(2)		20.6(10)						
3306.79(16)	6^-		14(2)		52(3)	11.2(9)					
3494.38(8)	$1,2^{\langle +\rangle}$			40(3)							
3496.26(11)				21(2)							
3522.94(22)	7^-				43		28	5.6(7)			
3550.14(24)	$\langle 7^-\rangle$						100				
3830.6(3)	8^+										25(2)
4048.0(6)	8^-							100			
4121.1(3)	8^+										24
4214.1(4)	$\langle 8^-\rangle$						≈56			44(6)	
4412.05(24)	$\langle 9^-\rangle$								79		
4625.0(5)	$\langle 10^+\rangle$										100
4786.9(5)	$\langle 10^+\rangle$										<7

(continued) **$^{78}_{34}$Se**

E^*	J^π	Branching ratios in percentage								
	E_f^*:	2742.5	2838.5	2889.9	2949.2	3013.9	3306.8	3522.9	3550.1	3585.0
[keV]	J_f^π:	4^-	$\langle 2^+ \rangle$	5^-	4^-	6^-	6^-	7^-	$\langle 7^- \rangle$	8^+
4819.2(6)	$\langle 9^- \rangle$								100	
4856.9(9)	$\langle 9^+ \rangle$									33(9)

Energy levels and branching ratios [91Ra06]. Part 5 **$^{78}_{34}$Se**

E^*	J^π	Branching ratios in percentage				
	E_f^*:	3704.0	3830.6	4048.0	4625.0	4786.9
[keV]	J_f^π:	$\langle 7^+ \rangle$	8^+	8^-	$\langle 10^+ \rangle$	$\langle 10^+ \rangle$
4121.1(3)	8^+		43(5)			
4412.05(24)	$\langle 9^- \rangle$			21(2)		
4625.0(5)	$\langle 10^+ \rangle$		<21			
4786.9(5)	$\langle 10^+ \rangle$		53(5)		≈47	
4856.9(9)	$\langle 9^+ \rangle$	67(4)				
5094.8(8)				100		
5689.1(8)						100
5783.7(7)	$\langle 12^+ \rangle$				100	

Energy levels and branching ratios [02Si13]. **$^{79}_{34}$Se**

E^*	$2J^\pi$	L	ε	σ (t,p)	L	S'	σ (d,p)	L	$S_{\ell j}$	$S_{\ell j}$	σ (d,t)	$T_{1/2}$ or	Ref.
[keV]		(t,p)	(t,p)	μb/sr		(d,p)	μb/sr		(p,d)	(p,d)	μb/sr	Γ_{cm}	
0.0	7^+						2760	4	0.128	0.08	930	$29(4)\cdot10^4$ yr	78Kl12
95.77(3)	1^-	0	46.3	1418(71)	1	0.60	2740	1	0.86	0.85		3.92(1) m	92Wa03
128(5)	$\langle 1^- \rangle$				1	0.40	incl				870		78Mo12
136.97(7)	9^+	5	1.8	17(2)	4	4.60	incl	4	4.66	2.06			92Wa03
364.86(8)	5^-	2	36.4	81(6)	3	1.14	610	3	2.25	1.6	400	94(24) ps	92Wa03
499(3)													
527.93(9)	3^-				1	0.50	2450	1	0.528	0.39	960	3.1(+24-10) ps	78Mo12
534(4)	$\langle 5^+,7^+ \rangle$	3	0.18	11(2)			incl						92Wa03
571.97(10)	5^-											16(+5-2) ps	
586(6)	$\langle 1^+,3^+ \rangle$	1	0.77	139(7)									92Wa03
629.81(12)	5^+	3	0.08	4(1)	2	0.77	3230	2	0.100	0.07	230		92Wa03
722.5(6)	$\langle \leq 5 \rangle$				2	0.38	1690	2	0.185	0.1	370		78Mo12
728.5(2)	5^+						incl				incl		
750(10)	$\langle 1^+,3^+ \rangle$	$\langle 1 \rangle$	0.08	14(2)							incl		92Wa03
790.38(10)	$\langle 7^- \rangle$											13(5) ps	
818.81(10)	$\langle 7^+ \rangle$											0.76(+35-21) ps	
897.16(10)	11^+											0.62(+14-7) ps	

(continued) **$^{79}_{34}$Se**

E^* [keV]	$2J^\pi$	L (t,p)	ε (t,p)	σ (t,p) μb/sr	L	S' (d,p)	σ (d,p) μb/sr	L	$S_{\ell j}$ (p,d)	$S_{\ell j}$ (p,d)	σ (d,t) μb/sr	$T_{1/2}$ or $\Gamma_{\rm cm}$	Ref.
974.84(17)	3^-				1	0.37	2320	1	1.25	1.15	1140		78Mo12
982.9(10)	$\langle\leq 7\rangle$										incl		
1008.2(1)	11^+											1.2(+7-4) ps	
1060.5(5)	$\langle 5^+–9^+\rangle$												
1072.4(2)	13^+											0.83(+28-21) ps	
1080.5(1)	$\langle 3\rangle$												
1088.7(1)	$\langle 3^-\rangle$												
1110.1(1)	$\langle 9\rangle^+$							4	0.787	0.44		1.0(3) ps	78Kl12
1134(8)	1^-	0	9.9	283(14)									92Wa03
1156(1)	1^+				0	0.94	19600	0+2	0.083				78Mo12
1231.2(2)	$\langle 7^+\rangle$											1.0(+4-3) ps	
1253.5(2)	5^+	3	0.49	36(3)	2	1.43	9200	2+4	0.015	0.03		0.48(+35-21) ps	92Wa03
1256.8(2)	$\langle 9^-\rangle$											0.7(+4-3) ps	
1312.0(3)	$\langle 7^-\rangle$							[2+4]				>0.21 ps	78Kl12
1322.2(2)	$\langle 5^-\rangle$							$\langle 3\rangle$		0.26		0.42(+14-11) ps	79Ba61
1340.0(1)	9^-											0.62(+21-14) ps	
1346(9)	$\langle 5^+,7^+\rangle$	3	0.059	4(1)									92Wa03
1385(10)	$\langle 5^-,7^-\rangle$							$\langle 3\rangle$		0.16			79Ba61
1417.6(3)	$\langle 7\rangle$												
1441(9)	$\langle 3^-,5^-\rangle$	2	25.0	51(4)									92Wa03
1489.8(4)	$\langle 9^-\rangle$											0.21(+10-7) ps	
1491(5)	1^+				0	0.09	1950						78Mo12
1526.4(2)	$\langle\leq 5\rangle$												
1561(25)													
1596.6(2)	3^+				2	0.62	3820						78Mo12
1636.5(2)	$\langle 13^+\rangle$												
1647(10)	$\langle 5^+,7^+\rangle$	3	0.15	10(2)									92Wa03
1667.8(3)	$\langle 11^+\rangle$												
1671(9)	5^+				2	0.20	950	$\langle 2\rangle$		0.02			78Mo12
1713.0(8)	$\langle 7–11\rangle$												
1738.9(2)	3^+	1	0.04	5(1)	2	0.26	1380						92Wa03
1760.1(2)													
1763.9(10)	$\langle 7,9^+,11\rangle$											0.8(+4-3) ps	
1765.0(4)	$\langle 11^-\rangle$												
1797.3(2)	$\langle 3\rangle$												
1817(10)	$\langle 5^-,7^-\rangle$							$\langle 3\rangle$		0.43			79Ba61
1863(8)	3^-			4(1)	1	0.16	≈130						78Mo12
1934.0(5)	$\langle 5\rangle$												
1935.7(4)	$\langle 9^+\rangle$												
1959(5)	3^-	2	3.3	8(1)				1		0.16			92Wa03
1967.8(3)	$\langle 13^+\rangle$											0.35(+17-7) ps	
2039(20)	$1^-,3^-$				1	0.05	430	1		0.17			78Mo12
2092(10)	$5^-,7^-$							3		0.45			79Ba61
2113.9(2)	15^+											0.42(+28-14) ps	
2127(7)	$\langle 3\rangle^-$	2	5.5	13(2)	1	0.05	430						92Wa03

(continued) **$^{79}_{34}$Se**

E^* [keV]	$2J^\pi$	L (t,p)	ε (t,p)	σ (t,p) μb/sr	L	S' (d,p)	σ (d,p) μb/sr	L	$S_{\ell j}$ (p,d)	$S_{\ell j}$ (p,d)	σ (d,t) μb/sr	$T_{1/2}$ or $\Gamma_{\rm cm}$	Ref.
2172(8)	5^+	3	0.07	6(1)	2	0.17	1050						92Wa03
2182.1(2)	$\langle 13^-\rangle$											1.0(+7-4) ps	
2182.2(4)	$\langle 13^-\rangle$											0.28(+21-14) ps	
2210.3(4)	$\langle 9^+\rangle$							$\langle 2\rangle$		0.08			79Ba61
2255(8)	$\langle 3\rangle^-$	2	1.8	4(1)	1	0.04	400						92Wa03
2258.3(4)	17^+											0.7(+4-3) ps	
2280.0(5)	$\langle 11,13\rangle$												
2303.3(5)	$\langle 13^-\rangle$												
2306(11)	$\langle 3^-,5^-\rangle$	2	2.8	8(2)									92Wa03
2327.8(8)	$\langle 15^+\rangle$												
2336(7)	$\langle 3^-,5^-\rangle$	2	4.1	11(2)									92Wa03
2340(20)	$\langle 5\rangle^+$				2	0.20	1030						78Mo12
2373(12)	5^+				2	0.19	670						78Mo12
2416(9)	$\langle 3^-,5^-\rangle$	2	3.2	7(2)									92Wa03
2467(6)	$\langle 1^+,3^+\rangle$	1	0.14	24(3)									92Wa03
2475(12)	5^+				2	0.16	980						78Mo12
2543(7)				32(3)									
2552(6)	$\langle 1^+,3^+\rangle$	1	0.24	47(4)									92Wa03
2581(12)	5^+				2	0.28	2730						78Mo12
2599(6)	$\langle 3^-,5^-\rangle$	2	8.4	18(2)									92Wa03
2651(5)	$\langle 5^+,7^+\rangle$	3	0.26	21(2)									92Wa03
2663.20(14)	$\langle 5^+\rangle$												
2689.09(18)	$\langle 5^+\rangle$												
2712(11)	$\langle 5^+\rangle$				$\langle 2\rangle$	0.08	440						65Li08
2736(6)	$\langle 3^-,5^-\rangle$	2	7.7	20(2)									92Wa03
2738.4(11)	$\langle 11$–$15^+\rangle$											0.49(+35-21) ps	
2769(12)	$\langle 5^+\rangle$				$\langle 2\rangle$	0.13	740						65Li08
2834.12(17)	5^+			20(3)	2	0.20	1040						78Mo12
2904.24(23)	$\langle 1^-,3\rangle$												
2941(12)	1^+				0	0.12	1700						65Li08
2963.0(6)	$\langle \le 5\rangle$												
2987(7)	1^-	0	2.9	66(5)									92Wa03
3031.5(3)	1^-	0	4.7	109(6)									92Wa03
3061.76(15)	$\langle 3^-\rangle$	2	4.6	10(2)	$\langle 2\rangle$	0.49	2530						65Li08
3121(5)	$\langle 5^+,7^+\rangle$	3	0.25	16(2)									92Wa03
3171.02(23)	$1^-,3,5^+$												
3176.52(17)	$\langle 3,5^+\rangle$	2	8.8	21(2)	$\langle 2\rangle$	0.25	1300						65Li08
3221(7)	$\langle 1^+,3^+\rangle$	1	0.26	46(4)									92Wa03
3280(20)	1^+				0	0.12	1740						65Li08
3340(20)	$\langle 3\rangle^+$				2	0.077	390						65Li08
3410(12)	3^+				2	0.51	4180						78Mo12
3505.8(3)	$\langle 1,3\rangle$												
3564.38(17)	$\langle 5^+\rangle$				$\langle 2\rangle$	0.42	1540						65Li08
3611(1)													
3676.8(5)	1^+				0	0.22	3300						78Mo12

(continued) **$^{79}_{34}$Se**

E^* [keV]	$2J^\pi$	L (t,p)	ε (t,p)	σ (t,p) μb/sr	L	S' (d,p)	σ (d,p) μb/sr	L	$S_{\ell j}$ (p,d)	$S_{\ell j}$ (p,d)	σ (d,t) μb/sr	$T_{1/2}$ or $\Gamma_{\rm cm}$	Ref.
3755(12)	$\langle 3^+\rangle$				2	0.076	420						65Li08
3796(12)	$\langle 3^+\rangle$				$\langle 2\rangle$	0.17	970						65Li08
3845(12)	$\langle 3^+\rangle$				$\langle 2\rangle$	0.25	1400						65Li08
3954(12)	$\langle 3^+\rangle$				$\langle 2\rangle$	0.31	1800						65Li08
4090(20)	$\langle 3^+\rangle$				$\langle 2\rangle$	0.32	1850						65Li08
4147(12)	3^+				2	0.31	3300						78Mo12
4360(20)	$\langle 3^+\rangle$				$\langle 2\rangle$	0.23	1410						65Li08
			92Wa03	92Wa03		78Mo12 65Li08	65Li08		78Kl12	79Ba61	65Li08		Ref.

Additional data on this isotope can be found in [02Ji07, 92Wa03].

Deuteron stripping parameters S' from [78Mo12, 65Li08] and cross sections σ (d,p) from [65Li08] are given together at left; cross sections of neutron pickup σ (d,t) [65Li08] are presented at right.

Parameter ε is $\varepsilon(2J_f+1) = (\sigma(exp)(2L+1)(2J_i+1))/(N\times\sigma(DWBA))$ with N=230 is given for the (t,p) reaction [92Wa03].

$S_{\ell j}$ for the (p,d) reaction were derived from the relation $d\sigma/d\Omega_{exp}$=2.29$S_{\ell j}(2j+1)^{-1}d\sigma/d\Omega_{DWBA}$ [79Ba61].

Energy levels and branching ratios [02Si13]. Part 2 **$^{79}_{34}$Se**

E^*	$2J^\pi$	Branching ratios in percentage										
	E_f^*:	0.0	95.8	137.0	365	528	572	630	722	728.5	790.38
[keV]	$2J_f^\pi$:	7^+	1^-	9^+	5^-	3^-	5^-	5^+	$\langle\leq 5\rangle$	5^+	$\langle 7^-\rangle$
95.77(3)	1^-	100									
136.97(7)	9^+	100									
364.86(8)	5^-	100									
527.93(9)	3^-		100								
571.97(10)	5^-		95(4)		4.7(5)						
629.81(12)	5^+	83(7)		17(3)	≤ 3						
728.5(2)	5^+	100									
790.38(10)	$\langle 7^-\rangle$	49(3)		30(2)	21(5)						
818.81(10)	$\langle 7^+\rangle$	31(3)		69(3)							
897.16(10)	11^+	19(2)		81(5)							
974.84(17)	3^-		79(3)			15(2)	6(2)				
982.9(10)	$\langle\leq 7\rangle$					100					
1008.2(1)	11^+	25(2)		75(5)							
1060.5(5)	$\langle 5^+$–$9^+\rangle$							[100]			
1072.4(2)	13^+			98(6)							
1080.5(1)	$\langle 3\rangle$				69(7)	31(6)					
1088.7(1)	$\langle 3^-\rangle$		54(15)		46(5)						
1110.1(1)	$\langle 9\rangle^+$	32(3)		60(4)							
1156(1)	1^+					x					
1231.2(2)	$\langle 7^+\rangle$	x		62(9)				38(7)			

(continued) **$^{79}_{34}$Se**

E^*	$2J^\pi$		Branching ratios in percentage								
		E_f^*:	0.0	95.8	137.0	365	528	572	630	722	728.5	790.38
[keV]		$2J_f^\pi$:	7^+	1^-	9^+	5^-	3^-	5^-	5^+	$\langle\leq5\rangle$	5^+	$\langle7^-\rangle$
1253.5(2)	5^+						100	x	x			
1256.8(2)	$\langle9^-\rangle$		22(2)		22(3)	56(4)						
1312.0(3)	$\langle7^-\rangle$				x	18(2)	<15	≈82				
1322.2(2)	$\langle5^-\rangle$						54(6)	46(5)				
1340.0(1)	9^-							100				
1417.6(3)	$\langle7\rangle$				42(4)				58(6)		≤20	
1489.8(4)	$\langle9^-\rangle$					100						
1760.1(2)												100
1763.9(10)	$\langle7,9^+,11\rangle$				100							
1765.0(4)	$\langle11^-\rangle$											100
1797.3(2)	$\langle3\rangle$							100				
1934.0(5)	$\langle5\rangle$							100				
2663.20(14)	$\langle5^+\rangle$				100							
2689.09(18)	$\langle5^+\rangle$				100							
2834.12(17)	5^+			46(38)	54(19)							
2904.24(23)	$\langle1^-,3\rangle$			23(18)		77(41)						
3031.5(3)	1^-			100								
3061.76(15)	$\langle3^-\rangle$					100						
3171.02(23)	$1^-,3,5^+$					100						
3176.52(17)	$\langle3,5^+\rangle$					35(19)			65(32)			
3505.8(3)	$\langle1,3\rangle$			100								
3564.38(17)	$\langle5^+\rangle$				59(15)				41(18)			
3676.8(5)	1^+									100		

Energy levels and branching ratios [02Si13]. Part 3 **$^{79}_{34}$Se**

E^*	$2J^\pi$		Branching ratios in percentage							
		E_f^*:	818.81	897.16	1008.21	1072.36	1110.07	1256.81	1339.98	2258.3
[keV]		$2J_f^\pi$:	$\langle7^+\rangle$	11^+	11^+	13^+	$\langle9\rangle^+$	$\langle9^-\rangle$	9^-	17^+
1072.4(2)	13^+			2.1(3)						
1110.1(1)	$\langle9\rangle^+$		8(1)	≤9						
1636.5(2)	$\langle13^+\rangle$			≈38	62(3)	x				
1667.8(3)	$\langle11^+\rangle$		100			x	x			
1713.0(8)	$\langle7–11\rangle$		x		x					
1935.7(4)	$\langle9^+\rangle$				100					
1967.8(3)	$\langle13^+\rangle$				100					
2113.9(2)	15^+			28(6)		72(6)				
2182.1(2)	$\langle13^-\rangle$			50(10)				50(10)		
2182.2(4)	$\langle13^-\rangle$								100	
2210.3(4)	$\langle9^+\rangle$			100						
2258.3(4)	17^+					100				
2280.0(5)	$\langle11,13\rangle$			100						

(continued) **$^{79}_{34}$Se**

E^*	$2J^\pi$	Branching ratios in percentage							
	E^*_f:	818.81	897.16	1008.21	1072.36	1110.07	1256.81	1339.98	2258.3
[keV]	$2J^\pi_f$:	$\langle 7^+\rangle$	11^+	11^+	13^+	$\langle 9\rangle^+$	$\langle 9^-\rangle$	9^-	17^+
2303.3(5)	$\langle 13^-\rangle$							100	
2327.8(8)	$\langle 15^+\rangle$			100	x				
2738.4(11)	$\langle 11–15^+\rangle$				100				
3611(1)									x

Energy levels and branching ratios [92Si19, 05Si20]. **$^{80}_{34}$Se**

E^*	J^π	L	ε	σ (t,p)	L	$\beta_L R$	β_L	$T_{1/2}$ or	Ref.	Branching ratios in percentage				
										E^*_f: 0.0	666	1449	1479	1701
[keV]			(t,p)	μb/sr		(p,p′)	(p,p′)	Γ_{cm}		J^π_f: 0^+	2^+	2^+	0^+	4^+
0.0	0^+	0	2.88	2297(115)				Stable	86Bu16					
666.27(7)	2^+	2	1.22	27(3)	2	1.03	0.193	8.56(14) ps	86Bu16	100				
1449.4(1)	2^+	2	0.53	15(2)	2	0.25	0.047	1.95(7) ps	86Bu16	60	40(2)			
1478.8(1)	0^+		weak	<17				11.4(17) ps	86Bu16		100			
1701.5(1)	4^+				4	–0.18	–0.03	0.66(2) ps	86Og01		100			
1873.3(2)	$\langle 0\rangle^+$	0	0.74	50(5)	2	0.05			86Bu16		100			
1960.0(1)	2^+	2	0.17	4.7(13)	2	0.05		7(3) ps	86Bu16	38(4)	62(4)			
2121.1(1)	$\langle 3^+\rangle$								05Si20		50(10)	50(10)		
2311.3(1)	$\langle 2^+\rangle$							0.18(4) ps			90(4)	10(1)		
2344.0(4)	$\langle 1^+,2^+\rangle$	$\langle 2\rangle$	0.23	8.6(18)				0.19(7) ps	86Bu16	4(1)	23(1)	73(8)		
2494.7(4)	$\langle 4^+\rangle$				4	0.25		0.8(4) ps	86Og01		37(4)	7(2)		56(4)
2513.6(1)	$\langle 2^+\rangle$	1	2.37	75(6)				0.08(3) ps	86Bu16	9(5)	60(7)	7(2)	≈24	x
2627.4(2)	$\langle 0^+\rangle$								05Si20			100		
2716.7(1)	3^-	3	0.62	54(4)	3	0.66	0.124	0.33(15) ps	86Bu16	0.05(3)	100			x
2774(1)	$\langle 1,2^+\rangle$									100				
2786.9(6)													100	
2814.5(2)	$\langle 2^+,1^+\rangle$				$\langle 2\rangle$				86Og01	100				
2825.6(2)	$\langle 6^+\rangle$								05Si20					100
2827.0(2)	$\langle 2^+\rangle$							0.09(4) ps		10(2)	90(18)			
2836(1)	$\langle 1,2^+\rangle$									100				
2895.5(10)	$\langle 6^+\rangle$								05Si20					
2947.5(2)	$\langle 2^+,4^+\rangle$				$\langle 2\rangle$				86Og01		49(5)	51(5)		
2998(5)														
3025.2(2)	$\langle 1^+,2^+\rangle$							0.02(1) ps	05Si20	21(4)	70(6)	9(5)		
3033(4)	$\langle 4^+\rangle$				4	0.22			86Og01					
3036(10)	$\langle 6^+\rangle$	6	0.34	6.0(15)					86Bu16					
3037.7(1)	$\langle 1^+,2^+\rangle$	2	0.14	incl					86Bu16			32(3)	30(2)	
3125.8(2)	$\langle 2^+\rangle$							0.03(1) ps	05Si20		93(14)	7(4)		
3160(9)	0^+	0	0.51	28(3)					86Bu16					
3176.9(2)	$\langle 1,2^+\rangle$								05Si20	100				
3199.5(3)	$\langle 2\rangle$									100				
3224.3(2)	$\langle 1,2\rangle$								05Si20				57(14)	43(14)

(continued)

$^{80}_{34}$Se

E^* [keV]	J^π	L	ε (t,p)	σ (t,p) μb/sr	L	$\beta_L R$ (p,p′)	β_L (p,p′)	$T_{1/2}$ or Γ_{cm}	Ref.	Branching ratios in percentage				
										E_f^*:	0.0	666	1449	1479	1701
										J_f^π:	0^+	2^+	2^+	0^+	4^+
3226(4)	$\langle 4^+ \rangle$				4	0.11			86Og01						
3248.4(6)	$\langle 2^+ \rangle$														
3280.4(4)	$\langle 1,2^+ \rangle$										58(16)	42(12)			
3284(4)	$\langle 3^- \rangle$				3	0.20			86Og01						
3314(5)															
3316.4(10)	$\langle 0 \rangle$														
3350.0(2)	$\langle 1^+ \rangle$	$\langle 3 \rangle$	0.10	15(2)					86Bu16		100				
3354(4)	$\langle 3^- \rangle$				3	0.25			86Og01						
3390.8(2)	$\langle 2^+ \rangle$	$\langle 2 \rangle$	0.52	18(2)					86Bu16				50(10)	50(10)	
3441.6(3)	$\langle 0^+ \rangle$				2	0.09			86Og01			56(17)			
3491(5)															
3567(5)															
3606.4(4)	$\langle 2 \rangle$											50(25)	50(25)		
3619.7(4)	$\langle 0^+,2^+ \rangle$	0	5.85	308(15)	$\langle 2 \rangle$				86Bu16			100			
3635.5(15)	$\langle 8^+ \rangle$								05Si20						
3640(5)															
3655.6(10)	$\langle 0,1,2 \rangle$														
3675(5)															
3727.2(5)	$\langle 0,1,2 \rangle$								05Si20			33(33)			
3753(4)	$\langle 3^- \rangle$	$\langle 3 \rangle$	0.01	22(3)	3	0.16			86Bu16						
3774(5)															
3813.7(4)	$\langle 6^+ \rangle$								05Si20						
3814.9(5)	$\langle 8^+ \rangle$								05Si20						≈10
3826(5)															
3845(10)															
3870.2(4)	$\langle 1^- \rangle$	$\langle 1 \rangle$	4.39	111(7)					86Bu16					100	
3931(4)	$\langle 2^+ \rangle$				$\langle 2 \rangle$				86Og01						
3951.9(4)	$\langle 2^+ \rangle$				$\langle 2 \rangle$				86Og01			100			
3976(8)	$\langle 1^- \rangle$	$\langle 1 \rangle$	2.72	73(5)					86Bu16						
3996(4)	$\langle 5^- \rangle$				5				86Og01						
4039(4)															
4047.0(6)	$\langle 2^+ \rangle$												100		
4062.3(4)	$\langle 0^+ \rangle$	$\langle 2 \rangle$	0.71	10(2)					86Bu16				100		
4129(8)	0^+	0	3.08	66(5)					86Bu16						
4130(4)	$\langle 3^- \rangle$				3	0.16			86Og01						
4173(4)	2^+	2	2.79	73(5)	$\langle 2 \rangle$				86Bu16						
4225(4)															
4247(7)	2^+	2	1.65	34(3)					86Bu16						
4295(4)															
4322(4)	$\langle 2^+ \rangle$	$\langle 2 \rangle$	1.94	44(4)					86Bu16						
4352(4)	2^+	2	1.82	47(4)					86Bu16						
4420(4)	$\langle 2^+ \rangle$				$\langle 2 \rangle$				86Og01						
4436.6(4)	$\langle 5^- \rangle$				5				05Si20						
4464(5)	$\langle 1^- \rangle$	$\langle 1 \rangle$	3.38	80(6)					86Bu16						
4511(4)	$\langle 4^+ \rangle$				4	0.10			86Og01						

(continued) **$^{80}_{34}$Se**

E^*	J^π	L	ε	σ (t,p)	L	$\beta_L R$	β_L	$T_{1/2}$ or	Ref.	Branching ratios in percentage				
										E_f^*:	0.0	666	1449	1479	1701
[keV]			(t,p)	μb/sr		(p,p′)	(p,p′)	Γ_{cm}		J_f^π:	0^+	2^+	2^+	0^+	4^+
4570(4)															
4673.5(18)	$\langle 10^+ \rangle$								05Si20						
4682(4)	$\langle 4^+ \rangle$				4	0.13			86Og01						
4950(4)															
4993(4)															
5180(30)															
5325(4)	$\langle 3^- \rangle$				3	0.11			86Og01						
7818.67(12)	$1^{\langle - \rangle}$										41.2(2)		3.5(1)	3.9(1)	
			86Bu16	86Bu16		86Og01	86Og01		Ref.						

Additional data on this isotope can be found in [99Ko46].
Abundance: 49.61(41) %.
Parameters of two-neutron transfer reaction (t,p) are given first; enhancement factor ε is a measure of the relative transition strength and is defined by $\sigma(exp) = 230\varepsilon \times \sigma(DWBA)$ [86Bu16].

Energy levels and branching ratios [92Si19, 05Si20]. Part 2 **$^{80}_{34}$Se**

E^*	J^π												
		E_f^*:	1873	1960	2311	2344.0	2514.25	2627.1	2813.9	2827.15	3126.08	3199.5
[keV]		J_f^π:	$0^+,2^+$	2^+	$\langle 1,2^+ \rangle$	$\langle 2^+ \rangle$	$\langle 1^-,2^+ \rangle$	$\langle 0,1,2 \rangle$	$\langle 2^+ \rangle$	$\langle 2^+ \rangle$	$\langle 2^+ \rangle$	$\langle 2 \rangle$
2344.0(4)	$\langle 1^+,2^+ \rangle$		x									
2716.7(1)	3^-				x							
3037.7(1)	$\langle 1^+,2^+ \rangle$			38(3)								
3441.6(3)	$\langle 0^+ \rangle$					44(11)						
3727.2(5)	$\langle 0,1,2 \rangle$				67(33)							
3814.9(5)	$\langle 8^+ \rangle$		90(34)									
7818.67(12)	$1^{\langle - \rangle}$		0.5(1)	11.5(1)	1.7(2)		2.6(1)	0.4(1)	1.4(1)	5.1(2)	5.2(1)	2.3(1)

Energy levels and branching ratios [92Si19, 05Si20]. Part 3 **$^{80}_{34}$Se**

E^*	J^π												
		E_f^*:	3248.4	3316.5	3350.34	3390.9	3441.6	3606.4	3619.7	3655.6	3870.2	3951.9	4062.3
[keV]		J_f^π:	$\langle 2^+ \rangle$	$\langle 0 \rangle$	$\langle 1^+ \rangle$	$\langle 2^+ \rangle$	$\langle 0^+,2^+ \rangle$	$\langle 2 \rangle$	$\langle 0^+,2^+ \rangle$	$\langle 0,1,2 \rangle$	$\langle 1^- \rangle$	$\langle 2^+ \rangle$	$\langle 0^+ \rangle$
7818.67(12)	$1^{\langle - \rangle}$		3.0(1)	0.9(2)	3.8(2)	3.5(1)	2.1(2)	1.5(1)	1.2(1)	0.5(1)	1.2(2)	1.2(2)	1.8(2)

Energy levels and branching ratios [96Ba89]. **$^{81}_{34}$Se**

E^* [keV]	$2J^\pi$	L	S' (d,p)	σ (d,p) μb/sr	S_N (d,p)	L	$S_{\ell j}$ (p,d)	σ (d,t) μb/sr	$T_{1/2}$ or Γ_{cm}	Ref.
0	1^-	1	0.62	3960	0.30	1	0.57	1530	18.45(12) m	78Mo12
102.99(6)	7^+	4	0.25	≈90	0.03	⟨4⟩	0.08	incl	57.28(2) m	65Li08
294.30(18)	9^+	4	2.80	1190	0.28	4	2.42	1060		78Mo12
467.77(8)	3^-	1	0.18	1580	0.045	⟨1⟩	0.26	1210		78Mo12
491.05(9)	$\langle 5\rangle^-$					⟨3⟩	0.75	incl		79Ba61
615.8(4)								750		65Li08
624.09(11)	5^-	3	0.34	280	0.073	3	1.02	incl		78Mo12
782(25)	$7^+,9^+$					4	0.06			79Ba61
889.08(25)	$\langle 3^+–7^+\rangle$	⟨0⟩	0.039	550	0.02					65Li08
1052.74(15)	5^+	2	1.17	6900	0.26	2	0.09	590		79Ba61
1109(25)	$3^+,5^+$					2	0.02			79Ba61
1232.82(22)	1^+	0	0.90	18800	0.64					78Mo12
1303.54(17)	5^+	2	1.99	11000	0.40	2	0.02	380		78Mo12
1406.34(14)	3^-	1	0.28	2670	0.075	1	0.97	1630		78Mo12
1628(25)	$1^-,3^-$					1	0.02			79Ba61
1702.3(4)	3^+	2	0.27	1690	0.058					78Mo12
1711.28(24)	$\langle 1–5^-\rangle$			incl						
1725.07(18)	$\langle 3\rangle^+$			incl		2	0.07			79Ba61
1812(25)	$7^+,9^+$					4	0.46			79Ba61
1828.2(4)	3^+	2	0.47	1880	0.061					78Mo12
2029.66(15)	$1^-,3^-$					1	0.07			79Ba61
2150(25)	$1^-,3^-$					1	0.32			79Ba61
2173.9(5)										
2179.32(17)		2	0.07	360	0.011	2	0.02			78Mo12
2253.1(4)	$\langle 5^+\rangle$									
2282(25)	$1^-,3^-$					1	0.04			79Ba61
2332.73(14)	5^+	2	0.17	1100		2+4	0.03,0.05			78Mo12
2383.1(8)	$\langle 5^-,7,9^-\rangle$									
2475(25)										
2532(6)	$\langle 5\rangle^+$	2	0.35	1740	0.051	4	0.15			78Mo12
2568.5(7)	1,3									
2570.19(16)	$1^-,3^-,5^-$									
2596(6)	$1^-,3^-$					1	0.13			79Ba61
2659.65(20)	5^-			100	0.05	3	0.20			79Ba61
2734(6)										
2769.76(16)	$\langle 5\rangle^-$					2+3	0.01,0.03			79Ba61
2773.4(5)	5^+	2	0.15	1650	0.049					78Mo12
2891(6)	$\langle 7^+,9^+\rangle$					3+4	0.1,0.06			79Ba61
2935.18(15)	$\langle 5\rangle^-$									
2953.4(20)	$1,3,5^+$	⟨0⟩	0.02	≈240	0.01					65Li08
2965.14(18)	$\langle 5\rangle^-$									
2986(6)		⟨0⟩	0.12	1900	0.07	3+4	0.1,0.07			65Li08
3053(6)	3^+	2	0.92	7500	0.36	⟨2⟩	0.07			78Mo12
3093(6)										
3150(25)	$X^{\langle -\rangle}$					1+3	0.02,0.03			79Ba61

(continued) **$^{81}_{34}$Se**

E^* [keV]	$2J^\pi$	L	S' (d,p)	σ (d,p) μb/sr	S_N (d,p)	L	$S_{\ell j}$ (p,d)	σ (d,t) μb/sr	$T_{1/2}$ or Γ_{cm}	Ref.
3208(6)										
3222.7(16)	$\langle 5\rangle^-$		0.31	1600	0.078					65Li08
3287(6)										
3308(6)			0.40	2310	0.19					65Li08
3349(25)	1^-,3^-					1	0.11			79Ba61
3379(6)										
3411(6)			0.29	1700	0.07					65Li08
3435(6)										
3477(6)										
3525.7(12)	1,3,5^+		0.21	1260	0.05					65Li08
3562(6)		[0]	0.16	2110	0.08					65Li08
3682(6)	3^+	2	0.12	2460	0.10					78Mo12
3774(6)	3^+,5^+	2	0.38	2200	0.095					65Li08
3830(6)	1^+	0	0.16	2520	0.10					78Mo12
3920	$\langle 1^+\rangle$	$\langle 0\rangle$	0.081	1000	0.04					65Li08
3970	$\langle 1^+\rangle$	$\langle 0\rangle$	0.10	1230	0.05					65Li08
4095(6)										
4137(6)			0.35	2300	0.088					65Li08
4164(6)		[2]	0.17	1000	0.042					65Li08
4215(6)	$\langle 3^+$,$5^+\rangle$	$\langle 2\rangle$	0.24	1410	0.06					65Li08
4260(6)	$\langle 3^+$,$5^+\rangle$	$\langle 2\rangle$	0.17	1000	0.042					65Li08
4437(6)				x						65Li08
4559(6)				x						65Li08
4656(6)				x						65Li08
4708(6)				x						65Li08
4845(6)				x						65Li08
4958(6)				x						65Li08
5080(6)				x						65Li08
5180										
5330										
			78Mo12				79Ba61	65Li08		Ref.
			65Li08	65Li08	65Li08					Ref.

Deuteron stripping parameters S' from [78Mo12, 65Li08], cross sections σ (d,p) and estimates of spectroscopic factor S_N from [65Li08] are given together at left.

Cross sections of neutron pickup reaction σ (d,t) [65Li08] are presented at right.

$S_{\ell j}$ for the (p,d) reaction were derived from the relation $d\sigma/d\Omega_{exp}$=$2.29 S_{\ell j}(2j+1)^{-1} d\sigma/d\Omega_{DWBA}$ [79Ba61].

Energy levels and branching ratios [96Ba89]. Part 2 **$^{81}_{34}$Se**

E^*	$2J^\pi$		Branching ratios in percentage								
		E_f^*:	0	103	294	468	491	616	624	889	1052.74
[keV]		$2J_f^\pi$:	1^-	7^+	9^+	3^-	$\langle 5\rangle^-$		5^-		5^+
102.99(6)	7^+		100								
294.30(18)	9^+			100							
467.77(8)	3^-		100								
491.05(9)	$\langle 5\rangle^-$		91(1)	9(1)							
615.8(4)						x	x				
624.09(11)	5^-			83(7)		17(2)					
889.08(25)	$\langle 3^+$–$7^+\rangle$		49	39(10)			≤13		11(3)		
1052.74(15)	5^+			72(12)	28(6)						
1232.82(22)	1^+		≤25			100					
1303.54(17)	5^+			26(20)		74(7)	≤21				
1406.34(14)	3^-		70.2(8)			23(4)	6.7(12)				
1702.3(4)	3^+		21(7)	23(3)			45(26)	≤19		≤21	11(3)
1711.28(24)	$\langle 1$–$5^-\rangle$		45(7)			55(5)			≤25		
1725.07(18)	$\langle 3\rangle^+$		84(7)			16(1)	≤5.6				≤8.0
1828.2(4)	3^+		62(8)			38(8)				≤6	
2029.66(15)	1^-,3^-		38(3)			62(8)					
2173.9(5)						63(8)			37(6)		
2179.32(17)							100				
2253.1(4)	$\langle 5^+\rangle$			≤20	21(4)	45(12)		19(4)	14(3)		
2332.73(14)	5^+		27(4)			47(3)	26(3)				
2383.1(8)	$\langle 5^-$,7,$9^-\rangle$						[100]				
2568.5(7)	1,3		66(10)								
2570.19(16)	1^-,3^-,5^-		28(3)			60(7)	11.2(16)				
2659.65(20)	5^-		100								
2769.76(16)	$\langle 5\rangle^-$					83(8)			17(3)		
2773.4(5)	5^+								<39	60(7)	
2935.18(15)	$\langle 5\rangle^-$			62(7)							<2
2953.4(20)	1,3,5^+					100					
2965.14(18)	$\langle 5\rangle^-$								37(6)		
3222.7(16)	$\langle 5\rangle^-$			28(7)			72(11)				

Energy levels and branching ratios [96Ba89]. Part 3 **$^{81}_{34}$Se**

E^*	$2J^\pi$		Branching ratios in percentage				
		E_f^*:	1232.82	1303.54	1406.34	1711.28	2179.32
[keV]		$2J_f^\pi$:	1^+	5^+	3^-		
1702.3(4)	3^+			≤12			
1725.07(18)	$\langle 3\rangle^+$		≤8				
2253.1(4)	$\langle 5^+\rangle$			≤71			
2568.5(7)	1,3				34(15)		
2773.4(5)	5^+				40(6)		

(continued) **$^{81}_{34}$Se**

E^*	$2J^\pi$	Branching ratios in percentage					
		E_f^*:	1232.82	1303.54	1406.34	1711.28	2179.32
[keV]		$2J_f^\pi$:	1^+	5^+	3^-		
2935.18(15)	$\langle 5\rangle^-$						38(4)
2965.14(18)	$\langle 5\rangle^-$			63(9)			

Energy levels and branching ratios [03Tu03]. **$^{82}_{34}$Se**

E^*	J^π	L	σ (t,p)	ε	L	β_L	$T_{1/2}$ or	Ref.	Branching ratios in percentage				
									E_f^*: 0	655	1410	1731	1735
[keV]				(t,p)		(p,p′)	Γ_{cm}		J_f^π: 0^+	2^+	0^+	2^+	4^+
0	0^+	0	2371(39)	35.0			Stable	84Wa13					
654.75(16)	2^+	2	16(2)	0.68	2	0.162	13.1(2) ps	84Wa13	100				
1410.30(18)	0^+	0	36(3)	0.54			30 ps	84Wa13		100			
1731.51(10)	2^+	2	52(2)	1.90	2	0.040	0.94(11) ps	84Wa13	79(6)	21(5)			
1735.12(25)	4^+	4	incl	3.05	⟨4⟩		0.96(15) ps	84Wa13		100			
2550.31(16)	$\langle 3,4^+\rangle$		10(2)							41(4)		37(5)	21(5)
2625.78(19)	$\langle 0^+\rangle$						0.04(1) ps			100			
2893.70(19)	5^-		17(2)		5			86Og01					
3009.19(19)	3^-	3	58(4)	0.07	3	0.128	0.020(5) ps	84Wa13		100			
3103.3(4)	$\langle 4^+\rangle$	⟨5⟩	11(2)	0.07	4	0.038		84Wa13					100
3145.0(4)	$\langle 6^+\rangle$												x
3238.80(21)	$\langle 4^+\rangle$				4	0.019	0.30(8) ps	86Og01		57(6)		43(11)	
3378.47(24)	$\langle 3^-\rangle$				3	0.023	0.12(4) ps	86Og01		51(5)		49(10)	
3445.9(4)	0^+	0	846(42)	13.8				84Wa13				100	
3454.18(20)	$\langle 5^-\rangle$	⟨5⟩											
3518.5(5)	$\langle 8^+\rangle$						6.6(4) ns						
3591.69(20)	2^+	2	35(3)	1.5	2	0.019	0.28(8) ps	84Wa13	9(4)		13(1)	78(13)	
3631.29(21)	$\langle 0^+\rangle$									60(12)		40(8)	
3664.0(4)	2^+	2	57(3)	2.5				84Wa13		25(7)			
3688.9(6)	4^+				4	0.026		86Og01		100			
3757.0(5)	2^+	2	63	4.7	2	0.023		84Wa13		76(8)	24(8)		
3798(4)	$\langle 4^+\rangle$				4	0.019							
3831.0(6)	0^+	0	271(10)	4.6				84Wa13		100			
3865.08(25)	$\langle 3^-\rangle$				3	0.036		86Og01				45(5)	
3917.9(6)	2^+	2	238(12)	10.2	2	0.021		84Wa13		100			
4036.2(3)	2^+	2	64(4)	2.8			0.17(5) ps	84Wa13					
4094.3(3)	$\langle 5^-\rangle$												
4134(6)	2^+	2	143(7)	6.1				84Wa13					
4391.4(4)	2^+	2	64(4)	2.7			0.13(3) ps	84Wa13			100		
4466(4)	$\langle 4^+\rangle$	⟨4⟩	13(2)	0.91				84Wa13					
4535(7)	$\langle 4^+\rangle$	⟨4⟩	40(3)	2.8				84Wa13					
4566.2(10)	$\langle 0^+,1,2\rangle$											100	
4584(4)	$\langle 4^+\rangle$	⟨4⟩	33(3)	2.3	4	0.026		84Wa13					
4809(13)	$\langle 1^-\rangle$	⟨1⟩	51(3)	0.52				84Wa13					

(continued) **$^{82}_{34}$Se**

E^* [keV]	J^π	L	σ (t,p)	ε (t,p)	L	β_L (p,p′)	$T_{1/2}$ or Γ_{cm}	Ref.	Branching ratios in percentage E_f^*: J_f^π:	0 0^+	655 2^+	1410 0^+	1731 2^+	1735 4^+
4881(13)	$\langle 4^+ \rangle$	$\langle 4 \rangle$	13(2)	0.90				84Wa13						
4969(11)			92(5)											
5029(12)	$\langle 1^- \rangle$	$\langle 1 \rangle$	36(3)	0.36				84Wa13						
5458.6(12)														
5688.6(15)														
			84Wa13	84Wa13		86Og01		Ref.						

Abundance: 8.73(22) %.

Parameters of two-neutron transfer reaction (t,p) are given first; enhancement factor ε is a measure of the relative transition strength and is defined by $\sigma(exp) = 9.7 \times N \times \varepsilon \times \sigma(DWBA)$ with N=23 [84Wa13].

Uncertainties in E^*, $T_{1/2}$, σ and branching ratios are given in Supplement.

Energy levels and branching ratios [03Tu03]. Part 2 **$^{82}_{34}$Se**

E^* [keV]	J^π	E_f^*: J_f^π:	2550 $\langle 3,4^+ \rangle$	2626 $\langle 0^+ \rangle$	2894 5^-	3145.0 $\langle 6^+ \rangle$	3518.5 $\langle 8^+ \rangle$	5458.6
			Branching ratios in percentage					
2893.70(19)	5^-		100					
3454.18(20)	$\langle 5^- \rangle$		17(3)		83(17)			
3518.5(5)	$\langle 8^+ \rangle$					x		
3664.0(4)	2^+		75(13)					
3865.08(25)	$\langle 3^- \rangle$				55(9)			
4036.2(3)	2^+			100				
4094.3(3)	$\langle 5^- \rangle$		100					
5458.6(12)							x	
5688.6(15)								x

Energy levels and branching ratios [01Wu02]. **$^{83}_{34}$Se**

E^* [keV]	$2J^\pi$	L	$(2J+1)S$ (d,p)	σ (d,p) μb/sr	S_N (d,p)	$T_{1/2}$ or Γ_{cm}	Ref.
0.0	9^+	4	1.80	1060	0.24	22.3(3) m	78Mo12
228.5(2)	1^-	1	0.11	1050	0.065	70.1(4) s	78Mo12
360(20)	$\langle 1^+ \rangle$	$\langle 0 \rangle$	0.24	3560	0.12		78Mo12
430(20)	$3^+,5^+$	2	0.11	540	0.018		78Mo12
539.5(3)	1^+	0	0.56				78Mo12
582.0(1)	5^+	2	2.76	17700	0.62	≈3 ns	78Mo12
822(3)	3^+	2	0.05	620	0.021		78Mo12

(continued) **$^{83}_{34}$Se**

E^* [keV]	$2J^\pi$	L	$(2J+1)S$ (d,p)	σ (d,p) μb/sr	S_N (d,p)	$T_{1/2}$ or Γ_{cm}	Ref.
963.1(2)	3^+	2	0.02	700	0.023		78Mo12
1062.7(7)	$\langle 1^+,3,5^-\rangle$						
1100.0(5)	3^+	2	0.60	1010	0.17		78Mo12
1264.9(6)	$\langle 5^+\rangle$						
1330.8(2)	5^+	2	0.33	2380	0.072		78Mo12
1472.3(6)	$\langle 3\rangle^+$	2	0.12	680	0.02		65Li08
1587(3)	$3^+,5^+$	2	0.04				78Mo12
1665.3(5)	5^+	2	0.38	1840	0.053		78Mo12
1710.0(6)	$\langle 1^+\rangle$						
1916(20)							
2076.7(1)	$\langle 5^+,7^+\rangle$						
2120(3)	$\langle 5^-,7^-\rangle$	$\langle 3\rangle$	0.42	510	0.07		65Li08
2140(3)							
2178(3)							
2195(3)	$\langle 3^+,5^+\rangle$	$\langle 2\rangle$	0.22	1200	0.055		65Li08
2314(3)	5^+	2	0.20	790	0.035		78Mo12
2409(3)							
2483(3)	5^+	2	0.47				78Mo12
2536(3)	3^+	2	1.98	15700	0.67		78Mo12
2741(3)	5^+	2	0.21	1460	0.06		78Mo12
2803(15)							
2858.3(3)	$\langle 5\rangle^+$	2	0.17	1820	0.075		78Mo12
2880.3(2)							
2978(15)	$\langle 1^-,3^-\rangle$	$\langle 1\rangle$	0.27	316	0.067		65Li08
3023(15)							
3106(18)							
3166.0(3)							
3211(15)	5^+	2	0.21	1680	0.065		78Mo12
3353(13)	5^+	2	0.20	1040	0.042		78Mo12
3462(13)	5^+	2	0.35	2640	0.097		78Mo12
3610(15)							
3647(12)							
3777(12)	$\langle 1^+\rangle$	$\langle 0\rangle$	0.17	1790	0.08		65Li08
3800(15)							
3865.1(2)	$\langle 1^+\rangle$	$\langle 0\rangle$	0.28	3030	0.14		65Li08
4020(20)							
4080(20)	$\langle 3^+,5^+\rangle$	$\langle 2\rangle$	0.054	400	0.013		65Li08
4180(20)	$3^+,5^+$	2	0.066	500	0.016		65Li08
4290(20)							
4420(20)							
4520(20)							
4680(20)							
4770(20)							
4950(20)							
4988.4(3)							

(continued) **$^{83}_{34}$Se**

E^* [keV]	$2J^\pi$	L (t,p)	$(2J+1)S$ (d,p)	σ (d,p) μb/sr	S_N (d,p)	$T_{1/2}$ or Γ_{cm}	Ref.
			78Mo12	78Mo12	78Mo12		Ref.
			65Li08				Ref.

Deuteron stripping parameters S' from [78Mo12, 65Li08], cross sections σ (d,p) and estimates of spectroscopic factor S_N from [65Li08] are given together at left.
Branching ratios are given in Supplement.

Energy levels and branching ratios [01Wu02]. Part 2 **$^{83}_{34}$Se**

E^*	$2J^\pi$	Branching ratios in percentage										
	E_f^*:	0.0	228	539	582	963	1063	1100.0	1264.9	1330.8	2076.7	3166.0
[keV]	$2J_f^\pi$:	9^+	1^-	1^+	5^+	3^+		3^+	$\langle 5^+\rangle$	5^+	$\langle 5^+,7^+\rangle$	
539.5(3)	1^+		100									
582.0(1)	5^+	100		≤0.1								
963.1(2)	3^+		100		0.02							
1062.7(7)	$\langle 1^+,3,5^-\rangle$		100									
1100.0(5)	3^+		4	18	78							
1264.9(6)	$\langle 5^+\rangle$	6			94							
1330.8(2)	5^+	93(6)		0.23	7.0	0.18	0.06	≤0.06				
1472.3(6)	$\langle 3\rangle^+$		46	23				31				
1665.3(5)	5^+	35		11	42	12						
1710.0(6)	$\langle 1^+\rangle$		14		48			5	33			
2076.7(1)	$\langle 5^+,7^+\rangle$	45(4)				55(4)						
2858.3(3)	$\langle 5\rangle^+$	45(4)				48(4)					7.6(8)	
2880.3(2)						71(8)				14.4(10)	14.4(10)	
3166.0(3)						100						
3865.1(2)	$\langle 1^+\rangle$	100										
4988.4(3)												100

Energy levels and branching ratios [97Tu02]. **$^{84}_{34}$Se**

E^*	J^π	L	σ (t,p)	σ (t,p)	ε	$T_{1/2}$ or	Ref.	Branching ratios in percentage				
								E_f^*:	0	1454	2122	2461	2699
[keV]		(t,p)	μb/sr	μb	(t,p)	Γ_{cm}		J_f^π:	0^+	$\langle 2^+\rangle$	$\langle 4^+\rangle$	2^+	
0	0^+	0	1074(54)	500	1.39	3.10(10) m	88Mu02						
1454.4(1)	$\langle 2^+\rangle$	$\langle 2\rangle$	16(3)	60	0.006		88Mu02		100				
1967(3)	$\langle 0^+\rangle$	$\langle 0\rangle$	76(7)		0.043		88Mu02						
2097(11)	$\langle 1^-\rangle$	$\langle 1\rangle$	36(5)		0.04		88Mu02						
2121.5(1)	$\langle 4^+\rangle$									100			
2244(7)	0^+	0	621(31)	500	0.353		88Mu02						

(continued) **$^{84}_{34}$Se**

E^* [keV]	J^π	L (t,p)	σ (t,p) μb/sr	σ (t,p) μb	ε (t,p)	$T_{1/2}$ or Γ_{cm}	Ref.	Branching ratios in percentage E_f^*: 0 1454 2122 2461 2699 J_f^π: 0^+ $\langle 2^+\rangle$ $\langle 4^+\rangle$ 2^+
2461.3(1)	2^+							70(4) 30(1)
2654(4)	0^+	0	904(45)	500	0.532		88Mu02	
2699.4(1)								46(3) 54(2)
2716(10)	$\langle 0^+\rangle$	$\langle 0\rangle$	53(6)		0.031		88Mu02	
2740(11)	$\langle 0^+\rangle$	$\langle 0\rangle$	46(5)		0.027		88Mu02	
2984.6(1)	2^+	2	787(38)	1500	0.254		88Mu02	91(5) 8.7
3024.2(1)	$\langle 2^+\rangle$	$\langle 2\rangle$	71(6)		0.023		88Mu02	95(3) 5(2)
3069.64(22)								100
3125.86(15)								78(6) 22(12)
3232.26(15)								100
3297.31(11)								91(4) 9(8)
3370.49(23)								100
3408.56(15)								100
3438.98(14)								19(1) 81(4)
3541.3(1)		2	94(6)	300	0.030		88Mu02	86(3) 14(1)
3548.1(4)					incl		88Mu02	100
3702	6^+		259(13)	510			05Lu07	
3871.8(2)								82(3)
3934(8)	2^+	2	30(4)		0.009		88Mu02	
3985.1(2)	2^+	2	40(5)		0.012		88Mu02	100
4082.0(2)								100
4106(17)	0^+	0	53(6)		0.031		88Mu02	
4116.2(2)								57(3)
4226(4)	2^+	2	332(17)	440	0.100		88Mu02	
4282.4(1)								12.6(8) 14(1)
4307(7)	$\langle 2^+\rangle$	$\langle 2\rangle$	81(6)		0.024		88Mu02	
4406	$\langle 7^+\rangle$						05Lu07	
4445.0(2)	$\langle 4^+\rangle$	4+	233(12)	710	0.10		88Mu02	100
4602(6)	2^+	2	91(7)		0.027		88Mu02	
4670(9)	$\langle 2^+\rangle$	$\langle 2\rangle$	71(6)		0.021		88Mu02	
4723(6)			393(20)	710				
4813(5)	$\langle 2^+\rangle$	$\langle 2\rangle$	43(5)		0.013		88Mu02	
4903(7)	$\langle 2^+,0^+\rangle$	$\langle 2+0\rangle$	66(6)		0.015+0.01		88Mu02	
4981(9)	1^-	1	208(11)		0.39		88Mu02	
5139(6)	2^+	2	224(9)	430	0.064		88Mu02	
5161.0(2)		2			0.040		88Mu02	100
5185(6)	2^+		138(8)	250			74Kn02	
5222.0(2)								58(3)
5258(6)	4^+	4	85(7)		0.043		88Mu02	
5295(9)	2^+	2	382(19)	630	0.109		88Mu02	
5373(9)			603(30)	770				
5437(9)	$\langle 5^-\rangle$	5+$\langle 0\rangle$	326(16)	740	0.59+0.07		88Mu02	
5507(9)	2^+	2	190(10)	250	0.054		88Mu02	
5596.3(2)	3^-	3	119(6)		0.12		88Mu02	53(4)
5627(9)	2^+	2	109(6)	160	0.031		88Mu02	

(continued) **$^{84}_{34}$Se**

E^* [keV]	J^π	L (t,p)	σ (t,p) μb/sr	σ (t,p) μb	ε (t,p)	$T_{1/2}$ or Γ_{cm}	Ref.	Branching ratios in percentage E_f^*: 0 / J_f^π: 0^+	1454 $\langle 2^+\rangle$	2122 $\langle 4^+\rangle$	2461 2^+	2699
5637.4(4)				incl					100			
5661.5(2)												100
5725(14)			139(9)									
5815(12)	2^+	2	151(8)		0.042		88Mu02					
5869.2(2)										48(4)		52(4)
5889.9(4)	$\langle 3^-,1^-\rangle$	$\langle 3+1\rangle$	337(17)		0.37+0.05		88Mu02		100			
5922(9)	$\langle 4^+\rangle$	$4\langle +0\rangle$	129(9)		0.038+0.05		88Mu02					
6005(12)	$\langle 4^+\rangle$	$4\langle +0\rangle$	246(12)		0.095+0.09		88Mu02					
6020.1(2)												
6249.4(2)										65(5)		
6329(21)	2^+	2	295(21)		0.080		88Mu02					
6400.3(4)	4^+	4	246(12)		0.116		88Mu02		100			
6541.4(4)									100			
6604.5(4)									100			
			88Mu02	74Kn02	88Mu02		Ref.					

Additional data on this isotope can be found in [91Ho10].
Parameters of two-neutron transfer reaction (t,p) are given first; enhancement factor ε is a measure of the relative transition strength and is defined by $\sigma(exp) = 230\varepsilon \times \sigma(DWBA)$ [86Bu16].
Factor ε is defined as ε=$\sigma(exp)/230\sigma(DWBA)$ with 10% uncertainty in $\sigma(exp)$.
Uncertainties in E^*, $T_{1/2}$ and branching ratios are given in Supplement.

Energy levels and branching ratios [97Tu02]. Part 2 **$^{84}_{34}$Se**

E^* [keV]	J^π	E_f^*: / J_f^π:	Branching ratios in percentage 3297	3409	3541
3871.8(2)			17.62		
4116.2(2)					43.48
4282.4(1)			28(1)		45(4)
5222.0(2)			42(3)		
5596.3(2)	3^-		47(4)		
6020.1(2)			100		
6249.4(2)				35(9)	

Energy levels [91Si01, 91Om02]. **$^{85}_{34}$Se**

E^* [keV]	$2J^\pi$	$T_{1/2}$ or Γ_{cm}
0	5^+	31.7(9) s
461.9	1^+	
1114.9	$3^+,7^+$	
1437.6		
1444.0		
1610.1		
1635.2		
1804.8		
1989.2		
2003.4		
2136.8		
2145.8		
2450.9		
3059.1		
3953.8		
4125.9		
4218.8		
4282.9		
4291.2		
4368.9		
4498.1		
4557.4		
4560.3		
4636.8		
4653.9		
4666.8		
4708.9		
4792.1		
5164.6		