

**No. 40A-3 CsHSO<sub>4</sub>, Cesium hydrogen sulfate***(M* = 229.98; [*D*: 230.99])

1b	phase	III	II	I		
	state			*		
	crystal system	monoclinic				
	space group	P2 <sub>1</sub> /m–C <sub>2h</sub> <sup>2</sup>			82Ito	
	Θ[K]	318 **		417 **	82Ito	
	* Superionic phase. See also about superionic phase				86Dol 81Kom, 84Bar 82Ito	
	** On heating. On cooling metastable phases II' appears at 408 K and III' appears at 353 K. Fully deuterated crystal CsDSO <sub>4</sub> : Θ <sub>III'–II</sub> ≈270 K, Θ <sub>I'–I</sub> = 413 K. ρ <sub>X</sub> = 3.346 · 10 <sup>3</sup> kg m <sup>–3</sup> at 296 K. Colorless. Cleavage plane: (100).				86Dol 90Ito 90Ito 90Ito	
2a	Crystal growth: cooling method from equimolar aqueous solution of Cs <sub>2</sub> SO <sub>4</sub> and H <sub>2</sub> SO <sub>4</sub> .				90Ito	
3a	Unit cell parameters:				90Ito	
	phase	T [K]	a [Å]	b [Å]	c [Å]	β [°]
	II	296	8.214(2)	5.809(2)	10.984(2)	119.39(2)
	Deuterated crystal CsDSO <sub>4</sub> :					87Mer
	phase	T [K]	a [Å]	b [Å]	c [Å]	β [°]
	I	430	5.729(9)	= a	14.21(1)	119.39(2)
	II	RT	7.789(5)	8.146(2)	7.726(6)	110.87(5)
b	Z = 4. Crystal structure: Table 40A-3-001, Table 40A-3-002; Fig. 40A-3-001. Crystal structure of deuterated crystal: Table 40A-3-003, Table 40A-3-004; Fig. 40A-3-002.				90Ito	
8a	Elastic stiffness constants obtained by Brillouin scattering: Table 40A-3-005.					
13a	NMR of <sup>133</sup> Cs: Fig. 40A-3-003. NMR of D: Fig. 40A-3-004.					