

Au – Ca (Gold – Calcium)

Crystal structure

The crystal structure of intermediate phases are collected in Table 1.

Table 1. Au–Ca. Structure and lattice parameters of intermediate phases.

Phase	Structure	Prototype	Lattice parameters [nm]			Reference
			<i>a</i>	<i>b</i>	<i>c</i>	
AuCa	ort	BCr	0.3861	1.1075	0.4576	[82 Mer]
AuCa ₃	ort	CFe ₃	0.7795	1.0000	0.6780	[85 For1]
Au ₂ Ca	ort	CeCu ₂	0.4600	0.7085	0.8055	[70 Bru]
Au ₂ Ca ₅	mon	B ₂ Pd ₅	1.6857	0.6809	0.7746	[85 For1]
				$\beta = 97.26^\circ$		
Au ₃ Ca ₅	tet	B ₃ Cr ₅	0.7867		1.430	[84 Mer]
Au ₃ Ca ₇	ort	Au ₃ Ca ₇	2.0742	1.8036	0.6665	[85 For2]
Au ₄ Ca ₅	mon	Au ₄ Ca ₅	0.8028	0.8019	0.7727	[85 For2]
				$\beta =$ 109.16°		
Au ₅ Ca	cub	AuBe ₅	0.7747			[64 Rau]
Au ₄ Ca ₃	hex	Pu ₃ Pd ₄	1.373512		0.590840	[99 Hen]

Thermodynamics

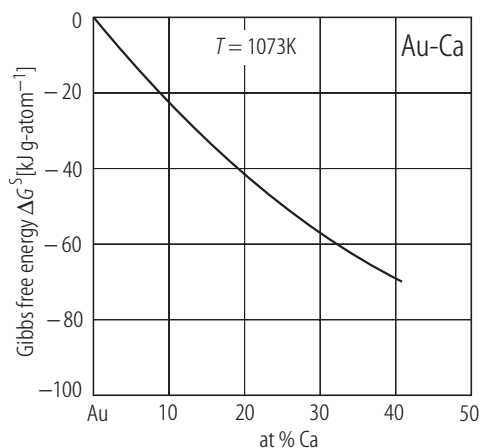
Notin et al. [82 Not], using an EMF method, have determined at 900 K some thermodynamic data for intermediate compounds. The results are given in Table 2.

Table 2. Au–Ca. Standard enthalpies of formation of intermediate phases in kJ g-atom⁻¹.

Compound	ΔH_{298}^S [kJ g-atom ⁻¹]
Au ₅ Ca	- 41
Au ₃ Ca	- 66
Au ₂ Ca	- 68
AuCa for $x_{\text{Ca}} = 0.49$	-104

(see also [95 Not]).

Alqasmi [99 Alq] and Egan [85 Ega], also using an EMF method, have determined Gibbs energies of formation of solid alloys at 1073 K. The results are plotted in Fig. 1.

Figure**Fig. 1. Au–Ca.** Gibbs energies of the formation of solid alloys at 1073 K [99 Alq].**References**

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