

Abstract Submitted
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High pressure/temperature equation of state of gold silver alloys¹
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PARK, HPCAT, Advanced Photon Source, Argonne National Laboratory — Gold-
silver alloys crystallize in face centered cubic structures, like their constituent pure
elements [McKeehan – Phys.Rev. 20, 424 (1922)]. The cell parameter of the alloys
does not scale linearly with the ratio of Ag/Au. In this work we investigate the
high-pressure/temperature behavior of gold-silver alloys with different Au/Ag ra-
tios. Powder x-ray diffraction experiments performed at HPCAT/Advanced Photon
Source confirm the stability of the alloy’s fcc structure to pressures/temperatures
exceeding 100 GPa/1000 K. We will present isothermal EOS of the alloys from am-
bient temperature up to 1000 K, discuss the thermal expansion and its variation
with pressure.

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