

Abstract Submitted  
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**A Multiphase Equation of State for Gold.** JAKE HAYNES, GEOFFREY COX, AWE, AWE TEAM — Gold is commonly used as pressure standard thus an accurate EoS for this material is needed. This poster describes the development of a multiphase EoS for gold using the process described in Cox and Christie [1]. In this methodology, parameters for statistical-mechanics-based condensed matter physics models are obtained using a stochastic analysis technique called particle swarm optimization. Equation of state codes from both AWE and LANL were both implemented using this process. This poster highlights the types of analysis that can be performed with this method and shows a discrepancy between high pressure isentropic compression data and the resultant gold EoS. [1] Cox, G. A., Christie, M. A., Fitting of a multiphase equation of state with swarm intelligence. *J. Phys.: Condens. Matter* 27, 405201 (2015).

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