



## Invited speaker's information form of IUMRS-ICA 2017

### Presentation on Symposium F2: Materials Design, Discovery, and Optimization Based on Computation

<p><b>Photo</b></p> 	<p><b>Presentation title</b> <b>Thermodynamics of High Entropy Alloys</b></p> <p><b>Speaker's name and affiliation</b> <b>Shuanglin Chen</b> <b>CompuTherm, LLC</b></p> <p><b>City/ Country</b> <b>Middleton, Wisconsin, USA</b></p> <p><b>Email</b> <b><a href="mailto:shuanglin.chen@computherm.com">shuanglin.chen@computherm.com</a></b></p>
<p><b>Brief biography of Speaker:</b></p> <p>Dr. Shuanglin Chen received his B.S. degree in Physical Chemistry of Metallurgy from the University of Science Technology-Beijing, PRC in 1984 and his Ph.D. in Metallurgical Engineering from the University of Wisconsin-Madison, in 1994. He joined CompuTherm in 1996. His main research interests include thermodynamic models, global optimization, data structure and algorithm design, and computer programming. He is the key developer of Pandat software.</p>	
<p><b>Abstract:</b></p> <p>High entropy alloys (HEA) are single-phase, near-equiatomic alloys with five or more components. HEA have relatively high mixing entropy compared to traditional alloys with only one or two major components. The thermodynamic stability of a phase is determined by its Gibbs free energy, which is a combination of contributions from entropy and enthalpy, and the relative stabilities of other phases. This presentation will demonstrate that single-phase HEA are unlikely to have spinodal decomposition even though their binary subsystems have high critical temperatures of miscibility gaps. It will also show that the driving forces that form binary or ternary compounds or intermetallic phases in HEA are smaller than driving forces in a traditional alloy with major components. These two factors keep HEA relatively stable or metastable thermodynamically.</p>	

Please fill the above form and send it to Prof. Shih-kang Lin ( [linsk@mail.ncku.edu.tw](mailto:linsk@mail.ncku.edu.tw) ), Prof. Nien-Ti Tsou ( [tsounienti@gmail.com](mailto:tsounienti@gmail.com) ), and Prof. Chih Chen ( [chih@mail.nctu.edu.tw](mailto:chih@mail.nctu.edu.tw) ).