SAN DIEGO STATE UNIVERSITY

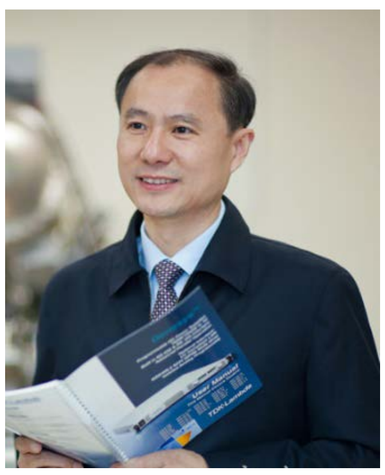
Mechanical Engineering
Special Seminar

Stability of Nanocrystalline Metals and Alloys

Friday, August 10th, 2018 10:30AM – 11:30AM,
EIS Conference Room 104

For the nanocrystalline metals and alloys, which are non-equilibrium in the viewpoint of thermodynamics, we developed models to describe its thermal and phase stabilities, wherein the nanoscale effects on the thermodynamic properties were quantified. The critical grain sizes for discontinuous grain growth and destabilization conditions for phase transformations were evaluated. Guided by calculations, a series of nanocrystalline metals and alloys with high stability were developed. Experimental results of the changes in stability because of nanostructuring and stabilization of the metastable phases confirmed the modelling work. We hope the mechanisms we proposed for stabilization of the nanostructures will facilitate the development of nanocrystalline materials with high and stable performance.

北京工業大學 BEIJING UNIVERSITY OF TECHNOLOGY



Dr. Zuoren Nie is Academician of Chinese Academy of Engineering (CAE), professor and Vice President of Beijing University of Technology (BJUT). Dr. Nie received Ph.D. degree in 1997 at Central South University in China. Dr. Nie has engaged in teaching and research work in the fields of non-ferrous metal metallurgy and materials processing for many years, devoting himself to the friendly development of the whole life cycle of materials. He specializes in refractory metals and aluminum alloys with many pioneering academic works and industrial applications. He has published 130 Chinese, U.S. and Japanese patents, 7 scientific books, and over 280 peer reviewed journal articles.

Dr. Xiaoyan Song is Yangtze River Scholars Distinguished Professor, and winner of National Fund for Distinguished Young Scientists. She received her Ph.D. degree from University of Science and Technology Beijing in 1999 and worked as Humboldt Fellow at Darmstadt University of Technology, Germany in 2000-2003. She has published over 200 papers in peer reviewed journals and has over 50 patents authorized. Some of her patents have been industrialized and lead to more than 10 kinds of high-grade engineering products. She has been engaged as the Associate Editor of *Int. J. Refract. Met. Hard Mater.* since 2013, and served as committee members of several international and domestic academic societies such as PTC and CMRS.

Dr. Xuemei Liu is an Associate Professor at Beijing University of Technology. She received her Ph.D. degree from Beijing University of Technology. She was a visiting scholar at the National Institute of Materials Research (NIMS) in Japan. Dr. Liu's research focused on the development of ultra-fine and nano-hard alloys, the recovery and regeneration technology of hard alloys, and the research and application of field assisted sintering mechanisms. Dr. Liu has published over 60 peer reviewed papers and has over 10 patents authorized.

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