UNT Upcoming Seminar Department of Materials Science and Engineering

2:30 pm – 3:30 pm February 23, 2018 at Discovery Park B-155

High entropy alloys, High throughput experiments and High Temperature metals

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ABSTRACT: New alloying concepts are needed to supply the continuing drive for new high temperature metals. High entropy alloys (HEAs) opens a vast range of alloy systems and compositions never considered before, with expansive opportunities to identify new alloy systems with a new balance of properties. The extremely large number of new alloy systems offered by HEAs is the greatest opporutnity and the greatest technical challenge, and introduces the need for new approaches to rapidly evaluate thousands or millions of new alloy systems quickly and effectively. Here we present a new strategy and suggest new, high throughput experiments tailored for structural metals to meet these new needs.

About the speaker:

Dr. Daniel Miracle is a Senior Scientist in the Materials and Manufacturing Directorate of the Air Force Research Laboratory (AFRL), where he shares responsibility for the quality, balance and focus of the technical program and the technical workforce. He is also a member of the AFRL Research Advisory Council, which is responsible for defining strategies, policies and workforce development for a staff of over 3400 scientists and engineers. He has conducted extensive research in the areas of nickel-based superalloys and intermetallic compounds; metal matrix composites; advanced aluminum alloys; and boron-modified titanium alloys. Current research interests include basic studies relating the atomic structure and stability of amorphous metals, and the exploration and development of complex, concentrated alloys for structural applications. Dr. Miracle received a B.S. degree in Materials Science and Engineering from Wright State University, M.S. and Ph.D. degrees in Metallurgical Engineering from The Ohio State University, and an Honorary Doctor of Science from the Institute of Metal Physics, Ukrainian Academy of Sciences,



Ukraine. Dr. Miracle is a Fellow of ASM, International; he is a Fellow of The Minerals, Metals & Materials Society (TMS); he is a Fellow of the Air Force Research Laboratory, and is an Honorary Member of the Indian Institute of Metals. Dr. Miracle has received the AF Basic Research Award and was co-recipient of the DoE Outstanding Scientific Accomplishment award. He is author or co-author of over 200 peer-reviewed scientific articles and 7 book chapters, and is co-editor of 6 books, including *Composites*, Volume 21 of the ASM Handbook series. Dr. Miracle is co-inventor on 8 patents and has given over 160 plenary, keynote and invited talks at national and international scientific venues in 19 countries.