TITLE

Identity of Materials Science and Engineering, and Entropy

ABSTRACT

Material properties (mechanical, functional and structural) are mostly related to their own structural defects, whatever types, either intrinsic or extrinsic. Presence of defects in a real crystal material system (T > 0 K) is inevitable by thermodynamic 3rd law, and their quantification can only be made thermodynamically by the equilibrium principle obtainable from the 2nd law. Thermodynamics could provide information on the direction of materials state change till equilibrium state is attained, and the latter, for materials processing systems, can be derived from the 2nd law.

Materials engineers and scientists are to manipulate the types and equilibrium quantities of specific defects in a crystal and determine the process-variables influencing equilibrium states of various reactions or phenomena in materials processing systems for their practical and industrial applications. Parallely they are also required to design and develop the relevant processes by optimizing the determined process-variables for their plant and industrial-scale applications.

These objectives could be achieved by materials scientists and engineers utilizing equilibrium principle coupled with process-kinetic information.

SPEAKER

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Professor **Seonhyo Kim** Obtained his **Ph.D**. from **Carnegie Mellon University** in 1986 under the guidance of one of the legendary professors in Iron and Steelmaking, **Prof. Richard J Fruehan**. Since 1987, he has been associated with the **Pohang University of Science and Technology (POSTECH)** where he is currently a full Professor**. Professor Kim** also works as a consulting professor with **POSCO** and is a visiting International scholar at the **University of Illinois at Urbana Champagne.** He has over more than 100 SCI Journal publications.

Venue & Time

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