

Institute Lecture

Selected Phenomena in Multicomponent Diffusion

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29th December 2015, Time: 4 PM, Venue: L-8



Abstract

There exist several interesting phenomena and observations reported in literature for isothermal diffusion in multicomponent systems. Such phenomena include uphill diffusion, development of zero-flux planes and flux reversals for individual components, flux reversals at interfaces, instability at interfaces and development of multiphase layer, and demixing of phases. In addition, uncommon diffusion structures exhibiting unusual diffusion paths can develop in both single phase and multiphase diffusion assemblies. An overview of such phenomena is presented to highlight the role of interactions among diffusing components with the aid of selected diffusion studies carried out in a variety of systems, including multicomponent alloys, aluminides, silicides, and nuclear fuel/cladding assemblies.

About the speaker

Prof. Mysore A. Dayananda received a B.Sc. (Hons) in Chemistry from University of Mysore in 1955 and a Diploma of the Indian Institute of Science in Metallurgy in 1957 in India. He continued his graduate studies in Metallurgical Engineering at Purdue University and earned his M.S.Met.E. and Ph.D. degrees in 1961 and 1965, respectively. Joining the faculty of the School of Metallurgical Engineering at Purdue as Assistant Professor in 1966, he has served as part of the MSE family under the various titles of Associate Professor (1970), Professor (1975), Interim Head (Summer 1999) and Associate Head (2005-2007). He was Visiting Professor at Munster University in Germany (1980) and Brahm Prakash Visiting Professor at the Indian Institute of Science (1992) in Bangalore, India. He has mentored about 50 graduate students for M.S. and Ph.D. degrees, published about 120 technical papers and edited four books. He is a recipient of the MSE Best Teacher Award (1982, 1990), the Engineering Faculty Engagement/Service Excellence Award (2003) and ASM-IIM Visiting Lectureship Award (2015). He is a Fellow of ASM International, a member of The Metallurgical Society, Sigma Xi, and ASEE and of the Advisory Board of Diffusion and Defect Data journal. His expertise is in the area of multicomponent, multiphase diffusion in metallic systems and intermetallic compounds, including aluminides, silicides, stainless steels, high temperature alloys, coatings, nuclear fuels and claddings. He discovered the phenomenon of zero-flux planes and flux reversals, and was honored at a special TMS symposium held in 2006 for his various contributions in multicomponent diffusion.

Tea at 3.45 PM

All interested are welcome.

Amalendu Chandra

Dean of Research and Development, IIT Kanpur