

AMMR-14: PHASE TRANSFORMATION IN METALS

Course Details:

Thermodynamic order of transformations, theory of nucleation -kinetics of homogeneous, transient & heterogeneous nucleation, Theory of thermally activated growth, interface controlled growth diffusion controlled growth, interface instability & Widmanstatten growth, Eutectoid growth, Discontinuous

precipitation, massive transformation, transformation kinetics: Johnson-Mehl equation, Avrami model, Transformation kinetics in diffusion controlled transformations, Isothermal & continuous cooling transformation diagrams, Precipitation & particle coarsening, Kinetics of recrystallization, theory of grain growth, Effect of second phase particles Solidification- nature & growth of solid liquid interfaces rapid solidification, glass transition, metallic glasses.

Text Books and Reference:

1. Materials Science and Engineering, V. Raghvan
2. Phase Transformation in Metals and Alloys, D. A. Porter & K. E. Easterling