MM 15 Hauptvortrag Yves Bréchet

Zeit: Samstag 08:30–09:00 Raum: TU H1058

Hauptvortrag MM 15.1 Sa 08:30 TU H1058

Modelling of phase transformations : from the lab to the plant — •Yves J.M. Bréchet — L.T.P.C.M., Domaine Universitaire de Grenoble, BP75 , F-38402 Saint Martin d'Hères

Traditionnally, the interest of physicists for phase transformations in the metallic solid state has been focussed either on order-disorder transitions, or on phase separation involving nucleation and growth or spinodal decomposition. In these problems, the techniques from statistical physics (Monte Carlo simulation) as well as the continuum approaches have proven to be very powerfull. However, "real life"as encountered in industrial situations , require complementary approaches: dealing with long time behaviour and the role of vacancies on the selection of kinetic path, dealing with non isothermal heat treatments such as the ones obtained during welding, dealing with other types of transformations involving interface migration and allotropic transformations. In turn, these questions driven by the side of application generate very fundamental questions on the coupling between thermodynamics and kinetics which might renew the interest of the physics community for these problems. The present contribution will illustrate on some examples from the physical metallurgy of steel and aluminium alloys the values and limits of the current approaches.