Reference Lists on DICTRA Package and Applications

The references selectively listed in this part are mainly regarding the development of the DICTRA software/database/interface package, kinetic models implemented in the software, mobility databases used together with the package, and some specific applications utilizing the package.

You may find hundreds of good references available in literature, on various applications of the DICTRA software/database/interface package.

1 General References with descriptions of the DICTRA software and the models used in the software

1.1 General description of the software and its applications


1.2 Models for diffusivities/mobilities in DICTRA


1.3 Numerical method for solving the multicomponent diffusion equation


1.4 Numerical method for moving boundary problems


1.5 Numerical method for diffusion in dispersed systems

1.6 Numerical method for coarsening of precipitates

1.7 Numerical method for diffusion through multiphase structures

2 References with applications treated by the DICTRA

2.1 Steels:

2.1.1 Solidification and microsegregation

2.1.2 Austenite → Ferrite transformation


2.1.3 Growth of secondary austenite


2.1.4 Growth/dissolution of Carbides, Nitrides and intermetallic phases


Numerical and Experimental Study On The Eutectic-Carbide M2C Decomposition Kinetics During Heat Treatment Of As Cast M2 High-Speed Steels. 59th Annual ABM International Congress; Sao Paulo; Brasil; 19-22 July 2004, by W. S. Da Silva, C. M. Garzon, H. Goldstein and A. P. Tschiptschin.


2.1.5 Carbidic coarsening


2.1.6 Sigma phase formation in stainless steels


2.1.7 Interdiffusion in compounds and cladding steels

2.1.8 Carburizing


2.1.9 Nitriding and Nitrocarburizing


2.2 Nickel based superalloys:

2.2.1 Solidification and microsegregation


2.2.2 Interdiffusion


2.2.3 Precipitate Growth/Dissolution


2.2.4 Coarsening of $\gamma'$ precipitates


2.2.5 Transient liquid-phase bonding

2.3 Aluminum based alloys:

2.3.1 Solidification and microsegregation


2.3.2 Precipitate dissolution


2.3.3 Precipitate growth


2.3.4 Laser hardening and laser welding

2.4 Cemented carbides:

2.4.1 Gradient sintering

2.4.2 Diffusion during sintering

2.5 Solders:

2.5.1 Sn-Ag-Cu solders

2.6 Other alloys:

2.6.1 Au-Ni alloys

2.6.2 Al-Cu alloys

2.6.3 Al-Zn alloys

2.6.4 Co-Fe and Co-Ni alloys

2.6.5 Cu-Ni alloys

2.6.6 Fe-B alloys
2.6.7 Fe-Pd and Ni-Pd diffusion couples

2.6.8 Fe-Si-Al alloys

2.6.9 Pu-alloys

2.6.10 Zn-Fe-Al alloy for galvanizing