

グローバル COE プログラム主催

講演会のお知らせ

講演題目

金属および金属間化合物における拡散

講師

ドイツ ミュンスター大学 材料物理学科

Helmut Mehrer 教授

日時： 10月3日（水）14:00-15:30

場所： 工学研究科材料物性記念館 2階

Mehrer 教授は世界的に著名な拡散研究者です。

多数の皆様のご来聴を歓迎します。

世話人

産研 中嶋英雄（内線 8435）

DIFFUSION in METALS and INTERMETALLICS

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Diffusion in solids is fundamental in the art and science of materials and thus an important topic of solid-state physics, physical metallurgy and materials science. A deeper knowledge about diffusion requires information on the positions of atoms and how they move in solids. In crystalline solids the atomistic mechanisms of diffusion are closely connected with defects. Point defects like vacancies or interstitials often mediate diffusion. Dislocations and grain boundaries are other types of defects and can act as high-diffusivity paths, because the mobility of atoms along such defects is usually much higher than in the lattice.

Starting from some fundamentals of solid-state diffusion, this talk reminds the audience to the major techniques for diffusion measurements including radiotracer and interdiffusion methods. Self-diffusion is the most basic diffusion phenomenon in any solid. The talk covers main features of self-diffusion in pure fcc and bcc metals and some important facts about diffusion of substitutional solutes in metals. Binary intermetallics are compounds of two metals or of a metal and a semimetal. Their structures are different from those of the constituents. Some intermetallics are interesting functional materials others have attracted attention as high-temperature structural materials. The talk reviews some results from our laboratory mainly on self-diffusion in binary intermetallics including the systems Fe-Al, Fe-Si, Ni-Mn and Mo-Si.

Literature:

H. Mehrer (Vol. Ed.), Diffusion in Solid Metals and Alloys, Landolt-Börnstein. New Series, Group III, Vol. 33, Springer Verlag, 1990,

Data Collection

H. Mehrer, Diffusion in Solids, Springer-Verlag,

Textbook published in July 2007