Faculty of Engineering
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Microstructural Analyses with Electron Microscopy

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(1)

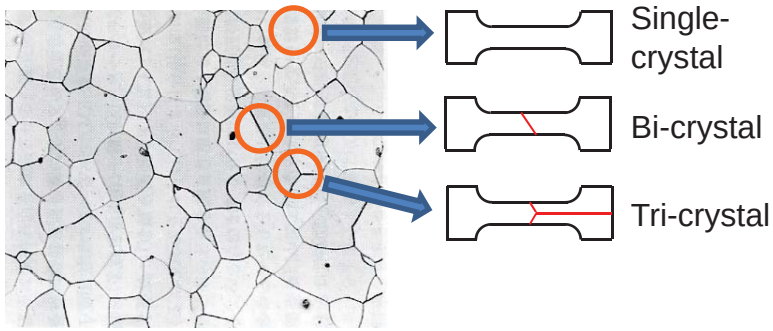

Fig. 1 Relationship between polycrystal and single-, bi- and tri-crystals

Fig. 2 Inverse pole figure orientation mapping of tensile-deformed Cu single crystal

(2)

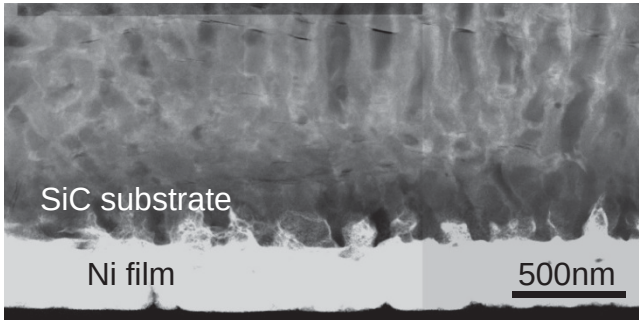

Fig. 3 Ni/SiC interface irradiated by femtosecond laser and subsequently annealed at 573K for 60s

Content:

(1) Analyses of crystal plasticity using single-, bi- and tri-crystals

We have been studying plastic deformation and recrystallization of orientation-controlled single-, bi- and tri-crystals of pure aluminum or copper. Polycrystalline materials are composed of grains with grain size of several ten to hundred μm. Hence, single-, bi- and tri-crystals are viewed as enlarged portions in a polycrystalline material (Fig. 1). In experimental studies, we carry out orientation analyses of deformed and annealed microstructures with a SEM/EBSD method (Fig. 2).

*SEM: scanning electron microscopy

*EBSD: electron backscatter diffraction

(2) Crystallographic analyses of defects with TEM

We also have been studying crystallographic defects with TEM. Our major interest is to find the laser-induced modification at Ni/SiC interfaces and its effect on the diffusion and formation of Ni-silicaide after the post-irradiation annealing. (Fig. 3)

*TEM: transmission electron microscopy

Keywords: crystallographic defect, electron microscopy, electron backscatter diffraction

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