【S-04】

Growth kinetics of single phase α-Fe thin Films electrodeposited on n-Si(111) substrate

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Single crystal α-Fe thin films with thickness in the range between ~10 and ~100 nm, were grown directly onto n-Si(111) substrates by electrodeposition.

The nucleation and growth kinetics at the initial reaction stages of Fe/n-Si(111) substrate was studied by current transients. And during deposition process, the behaviors of Fe deposition were monitored by current evolution versus deposition time. Current transients measurements have indicated that the deposition process starts via instantaneous nucleation and 3-dimensional diffusion limited growth. After the more deposition, the deposition flux of Fe ions was saturated with increase of deposition time.

And Fe films grown by electrodeposition have been characterized using scanning electron microscope(SEM), transmission electron microscope(TEM) and X-ray diffraction (XRD).