Growth simulation of Cu columnar structures under oblique angle deposition and Monte Carlo random walks

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Abstract
In this simulation model, oblique angle deposition method and Monte Carlo random walks have been used. Growth model was ballistic deposition (BD). Incident particles flux comes to substrate at an angle with respect to normal. Two physical factors including self-shadowing and mobility limitation of incident particles make structures similar to independent columns with different shapes and separated with voids, grow in the incident particles direction. Some parameters such as columns angle, structural morphology, density, and surface roughness are studied. Structural morphology under oblique angle is grown columnar and with an increase in the incident angle, shadowing and porosity increase. Density and interface roughness increase by increasing the incident angle, as well.

Keywords: shadowing, morphology, structure density, surface roughness

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