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Synergistic Ag (111) and Cu (111) texture evolution in phase segregated $Cu_{1-x}Ag_x$ magnetron sputtered composite thin films DANA I. FILOTI, ANDREA R. BEDELL, JAMES M.E. HARPER, University of New Hampshire — We have investigated the evolution of texture and microstructure of $Cu_{1-x}Ag_x$ composite thin films through X-ray diffraction pole figures as a function of composition for x $\leq$ 0.5. The texture evolution of Cu (111) and Ag (111) in phase-segregated Cu-Ag thin films proves to be synergistically enhanced when compared to pure copper or silver thin films. As-codeposited at room temperature, the fcc composite $Cu_{1-x}Ag_x$ grows as a phase-segregated thin film, when the Ag volume fraction represents more than 15 at. % up to 50 at. %, or as a single phase thin film when Ag volume fraction represents less than 15 at. %. Not only is a stronger perpendicular (111) fiber texture obtained, but also an in-plane alignment of Ag (200) develops related to deposition direction and composition. By the use of transmission electron microscopy we observed a decrease in grain size in Cu-Ag composite films as compared with pure copper and silver films.

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