Substrate Temperature Dependence of Crystalline Microstructure for CoCrTa Films

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These photographs show transmission electron diffraction patterns and TEM micrographs for CoCrTa films, which were deposited under differing substrate temperature T_s (60°C, 100°C and 140°C). Diffraction patterns, such as (100), (110) and (200), are observed for the hcp-Co planes. Crystalline grain sizes decrease with increasing T_s . Furthermore, perpendicular anisotropy field H_k and perpendicular coercivity $H_{c\perp}$ values increase with increasing T_s . A fine grain structure with good c-axis orientation and high $H_{c\perp}$ are obtained by the addition of Ta to CoCr films under high T_s .

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