

Effect of chromium sub-layer on the magnetic properties of nickel- and alumina-based magneto-dielectric coatings deposited in forevacuum

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We present our research of the effect of a chromium sublayer on the magnetic properties (effective saturation magnetization) of the magneto-dielectric coatings consisting of 1.2–1.8 μm thin layers of magnetic metals (nickel, iron) and alumina ceramics, obtained by electron-beam evaporation of the targets in helium at fore-vacuum (5–8 Pa) pressures. We found that, contrary to what was expected, the addition of a chromium sublayer deteriorates the magnetic properties of the films; therefore, it seems that it is more productive to synthesize such magneto-dielectric coatings under the described conditions without such sublayer.

Keywords: magneto-dielectric coatings, thin films, iron, nickel, alumina, fore-vacuum plasma electron sources, beam plasma.

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