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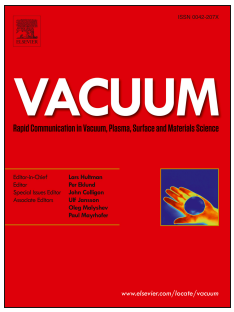


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# Irradiation of sputtered Al-Si-N coatings by pulsed 200 keV $C^+$ ion beam

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## Abstract

This paper reports on the effect of the irradiation of Al-Si-N coatings by an intense pulsed ion beam. The Al-Si-N coating was deposited on a steel substrate by a reactive magnetron sputtering. The Al-Si-N coating with a high silicon content (30 at.%) was irradiated by a high-intense pulsed $C^+$ ion beam. It was shown that metastable growth defects (GDs) created in the Al-Si-N coating during deposition can be healed up by its post-deposition irradiation using several pulses (1 and 10) of $C^+$ ions with energy $E_i$ = 200 keV, ion current density $i_s$ = 7 A/cm$^2$, pulse duration $t_p$ = 110 ns and radiation dose 2 MGy. The reduction in deposition-induced GD density results in an increased transmittance of the Al-Si-N coatings.

**Keywords:** Ion beam; Al-Si-N coating; Irradiation; Light transmittance; Magnetron sputtering.