Abstract Submitted
for the GEC10 Meeting of
The American Physical Society

Deposition of MgF_2 thin films by pulsed laser ablation technique

ALESSIO PERRONE, ANTONELLA LORUSSO, Physics Department, University of Salento, FRANCESCO GONTAD, Dpto. Fisica Aplicada, University of Vigo, RADIATION PHYSICS LABORATORY TEAM, NEW MATERIALS LABORATORY TEAM — In this paper, we report the successful growth of MgF_2 thin films on Si and zaffire substrates at room temperature by laser ablation of a pure MgF_2 target. The irradiations were performed at high vacuum (10^{-5} Pa) using the forth harmonic of a Nd:YAG laser with energy density of about 10 J/cm^2. Uniform films, with a good adhesion on the substrate were obtained. The average ablation and deposition rates resulted to be 2.2 μg/pulse and 0.3 Å/pulse, respectively. Different diagnostic techniques were used to characterize the films deposited on Si substrate. Films deposited on zaffire were dedicated to optical characterizations. Mass spectrometry studies of the laser ablated material indicate strong correlation between the partial pressure of the chemical species present in the plume and the residual gas. Present interest in the deposition of MgF_2 thin films is related to their potential application as protecting coatings in photocathodes.

Alessio Perrone
Physics Department, University of Salento

Date submitted: 09 Jun 2010

Electronic form version 1.4