

Abstract Submitted
for the GEC13 Meeting of
The American Physical Society

Dynamics of pulsed laser deposition plasmas KIM PEERENBOOM, JAN VAN DIJK, Eindhoven University of Technology, RIK GROENEN, KASPER ORSEL, BERT BASTIAENS, University of Twente — Pulsed laser deposition has proven to be a successful technique to deposit complex materials with atomic precision. In the first stage of the pulsed laser deposition process, target material is ablated by irradiation with a high power pulsed laser. This ablated material develops into a plasma plume which expands and is finally deposited on a substrate. Although the pulsed laser deposition technique itself is simple, the physical processes behind it are rather complex. As a result of this complexity, up to now understanding of the pulsed laser deposition process is limited to empirical knowledge. To establish the link between the experimental parameters (e.g. laser pulse duration, background pressure) and the deposited film, quantification of the species fluxes in the plasma plume is crucial. As a first step towards such a quantification, we will present a numerical simulation studying the influence of the background gas on the dynamics of the plasma plume.

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Date submitted: 12 Jun 2013

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