ON THE ROLE OF LASER ABLATED CHARGED SPECIES IN THE FORMATION OF NOVEL METAL ATOM TRAPPING SITES IN RARE GAS MATRICES

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We have previously reported the generation of novel "tight" metal atom trapping sites in rare gas matrices prepared by laser ablation of metal targets [a]. We proposed a microscopic model of the matrix deposition process which attributed this phenomenon to implantation of fast laser ablated atoms into previously deposited matrix layers. We have since attempted to repeat these experiments using a refined laser ablation source capable of rejecting charged species from the laser ablated plume [b]. Results on Li, Na, and Al atom doped Ar matrices demonstrate that trapping of laser ablated IONS, not fast metal atoms, are responsible for the observed novel effects.

[a] S. Tam and M.E. Fajardo, J. Chem. Phys. 99, 854 (1993).
[b] M. Macler and M.E. Fajardo, Appl. Phys. Lett. 65, 2275 (1994).