

Abstract Submitted  
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**Surface islands nucleated by a beam of energetic self-ions on Pt(111): A low-energy electron microscopy study**<sup>1</sup> MICHAL ONDREJCEK, C. PETER FLYNN, WACEK SWIECH, University of Illinois at Urbana-Champaign — Using low energy electron microscopy (LEEM), we observe the adatom and advacancy islands nucleate and evolve when clean Pt(111), in the temperature range 750-1300K, is bombarded by a beam of Pt<sup>-</sup> ions of various energies. The source of negative ion beam is incident on the sample at normal incidence with impact energies selectable in the range of 0 to 5 keV, and with current densities up to 40  $\mu\text{A}/\text{cm}^2$ . We describe briefly initial experiments done with LEEM-Ion accelerator tandem namely the investigations of relaxing steps extending the range over which surface mass diffusion coefficient  $D_s$  is known on Pt(111) and observed neutral energy of 245 eV, at which sputtering balances the self-ion input. The results reveal a previously unobserved symmetry between the chemical potentials  $\mu^*$  required to nucleate the adatom and advacancy islands. Linear response theory is employed to relate  $\mu^*$  to ion beam flux; the observations confirm that its use is valid above 1000K.

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Michal Ondrejcek  
University of Illinois at Urbana-Champaign

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