Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Random Sequential Adsorption on patterned substrates: jammed state structure and kinetic properties N. A. M. ARAUJO, J. F. MARQUES, GCEP-Centro de Fisica da Universidade do Minho, Braga, Portugal, A. CADILHE, GCEP-Centro de Fisica da Universidade do Minho, Braga, Portugal. T-1 Group, MS B268, Los Alamos National Laboratory, Los Alamos, NM, USA, V. PRIVMAN, Department of Physics, and Center for Advanced Materials Processing, Clarkson University, Potsdam, NY, USA — The irreversible adsorption on a patterned substrate is studied through extensive Monte Carlo simulations. As a pattern, we adopted square cells positioned at the vertices of a square lattice. Particles attempting adsorption can only stick to the substrate if they do not overlap previously adsorbed ones (excluded volume interaction) and if their geometrical centers land inside a cell. Once a particle is adsorbed, it does not detach from or diffuse on the substrate, thus representing an extended random sequential adsorption model. The distribution of particles sizes follows a truncated gaussian-size distribution with values of the size dispersion varying from zero (monodisperse) to 20% (polydisperse) of the mean particle radius. We address the influence of both the pattern and size dispersion on the jammed state structure. We also present results on how the kinetics of approach to the jammed state is affected by the particular values taken by parameters like cell size and cell-cell separation and show that they can lead to either exponential or power-law functional dependences.

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Date submitted: 21 Nov 2008 Electronic form version 1.4