Abstract Submitted
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Voronoi Cell Patterns: theoretical model and application to submonolayer growth[1] DIEGO LUIS GONZÁLEZ[2], T.L. EINSTEIN, U. of Maryland — We use a simple fragmentation model to describe the statistical behavior of the Voronoi cell patterns generated by a homogeneous and isotropic set of points in 1D and in 2D. In particular, we are interested in the distribution of sizes of these Voronoi cells. Our model is completely defined by two probability distributions in 1D and again in 2D, the probability to add a new point inside an existing cell and the probability that this new point is at a particular position relative to the preexisting point inside this cell. In 1D the first distribution depends on a single parameter while the second distribution is defined through a fragmentation kernel; in 2D both distributions depend on a single parameter. The fragmentation kernel and the control parameters are closely related to the physical properties of the specific system under study. We apply our model to describe the Voronoi cell patterns of island nucleation for critical island sizes i=0,1,2,3. Experimental results for the Voronoi cells of InAs/GaAs quantum dots are also described by our model.

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