Abstract Submitted
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Scaling and Exponent Equalities in Island Nucleation: Novel Results and Application to Organic Films Alberto Pimpinelli, Levent Tumbek, and Adolf Winkler[1] ALBERTO PIMPINELLI, Rice Quantum Institute, LEVENT TUMBEK, ADOLF WINKLER, Graz Univ of Technol. — As discussed in the first talk, the scaling of the island density with the flux F and/or the capture zone distribution (CZD) can be used to determine the size of the critical nucleus i, but so far an analytic function for CZD exists only for diffusion-limited aggregation (DLA). For CZD the scaling function is $P_\beta(s) = a_\beta s^\beta \exp(-b_\beta s^2)$, with $\beta = i+2$. We have extended the analytic description of the CZD in terms of P_β also to attachment-limited aggregation (ALA); in this case we obtain $\beta = (i+3)/2$. Furthermore, we could demonstrate that the general relationship $\alpha\beta = i$ holds, independent of the aggregation mechanism.[2] This important exponent equality should help to better characterize nucleation and growth of thin films.

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[2]A. Pimpinelli, L. Tumbek, & A. Winkler, J. Phys. Chem. Lett. 5, 995 (2014)

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