

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Frost nucleation, growth and propagation on a hydrophobic surface¹ JOSÉ GUADARRAMA-CETINA, University of Navarra, ANNE MONGRUEL, PMMH, UMR 7636 CNRS-ESPCI-University Paris 6-University Paris 7, WENCESLAO GONZÁLEZ-VIÑAS, University of Navarra, DANIEL BEYSENS, PMMH, UMR 7636 CNRS-ESPCI-University Paris 6-University Paris 7 and CEA-Grenoble — We report experimental results on the condensation of water vapor on a substrate (-9 °C) at supercooled conditions. The resulting frost figure grows until the liquid to solid phase transition takes place. The frost seeds start to grow by deposition at the expense of neighboring supercooled water drops that evaporate. Sometimes the propagation (due to the growth of the ice) is faster than the evaporation of the drops, hence they transit to the solid state via a percolation mechanism. In this work [1], we analyze the growth of supercooled condensed drops (first stage), the growth of the ice crystals and the evolution of the supercooled water drops (intermediate and late stages). We also consider the liquid - solid front propagation (growth of the frost figure).

[1] J. Guadarrama-Cetina, A. Mongruel, W. González-Viñas, D. Beysens. In preparation

¹This work is partly supported by the Spanish Government (contract No. FIS2008-01126). J.G. acknowledges the financial support from the "Asociación de Amigos de la Universidad de Navarra".

José Guadarrama-Cetina
University of Navarra

Date submitted: 22 Dec 2011

Electronic form version 1.4