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Shapes of randomly placed droplets MAHESH PANCHAGNULA, NACHIKETA JANARDAN, SRI VALLABHA DEEVI, Indian Inst of Tech-Madras — Surface characterization is essential for many industrial applications. Surface defects result in a range of contact angles, which lead to Contact Angle Hysteresis (CAH). We use shapes of randomly shaped drops on surfaces to study the family of shapes that may result from CAH. We image the triple line from these drops and extract additional information related to local contact angles as well as curvatures from these images. We perform a generalized extreme value analysis (GEV) on this microscopic contact angle data. From this analysis, we predict a range for extreme contact angles that are possible for a sessile drop. We have also measured the macroscopic advancing and receding contact angles using a Goniometer. From the extreme values of the contact line curvature, we estimate the pinning stress distribution responsible for the random shapes. It is seen that this range follows the same trend as the macroscopic CAH measured using a Goniometer, and can be used as a method of characterizing the surface.

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