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Coarsening of two-dimensional islands in freely suspended smectic A films¹ DUONG NGUYEN, CHEOL PARK, JOSEPH MACLENNAN, MATTHEW GLASER, NOEL CLARK, University of Colorado, Boulder — We have observed coalescence driven coarsening of islands (edge dislocation loops) in freely suspended Smectic A liquid crystal films. This is a good realization of a two-dimensional system, with films as thin as one molecular length (3-4 nm). The film is drawn by spreading material across a circular hole of about 4 mm in diameter, after which the film is suspended by the meniscus in contact with the edge of the hole. Islands are generated by blowing air parallel to the film surface, which produces a shearing force that breaks a thick region of the film into circular islands. Depending on the Smectic A material, we observe either strong or weak short-range repulsion between dislocation loops, leading to slow or fast coalescence, respectively. Over time, the average size of islands increases as the number of islands drops. The observed coarsening dynamics is compared with theoretical predictions.

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Cheol Park
University of Colorado, Boulder

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