

Abstract Submitted
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The interplay of crack hopping, delamination and interface failure in drying nanoparticle films¹ MICHAEL SMITH, BIN YANG, JAMES SHARP, University of Nottingham — Films formed through the drying of nanoparticle suspensions release the build-up of strain through a variety of different mechanisms including shear banding, crack formation and delamination. In this talk I will show that important connections exist between these different phenomena: delamination depends on the dynamics of crack hopping, which in turn is influenced by the presence of shear bands. We also show that delamination does not occur uniformly across the film. As cracks hop they locally initiate the delamination of the film which warps with a timescale much longer than that associated with the hopping of cracks. The motion of a small region of the delamination front, where the shear component of interfacial crack propagation is believed to be enhanced, results in the deposition of a complex zigzag pattern on the supporting substrate.

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