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Mapping Instabilities in Polymer Friction CHARLES RAND, Dept. of Polymer Science and Engineering, University of Mass., Amherst, ALFRED CROSBY, University of Mass., Amherst Dept. of Polymer Science and Engineering — Schallamach waves are instabilities that occur as interfaces between a soft elastomer and rigid surface slide past each other.(1) The presence of Schallamach waves can lead to drastic changes in frictional properties. Although the occurrence of Schallamach waves has been studied for the past several decades, a general map relating fundamental material properties, geometry, and operating conditions (i.e. speed and temperature) has not been established. Using a combinatorial approach, we illustrate the role of modulus, testing velocity and surface energetics of crosslinked poly(dimethyl siloxane) on the generation Schallamach waves. This knowledge will be used with polymer patterning processes to fabricate responsive coatings for applications such as anti-fouling coatings. (1)Schallamach, A.;Wear 1971,17, 301-312.

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