

Abstract Submitted
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A Systematic Study of Bilayer Failure on Engineered Surfaces

MORGAN MAGER, NICHOLAS MELOSH, Stanford University — Ever since the invention of black lipid membranes, supported lipid bilayers have been an important tool for studying integral membrane proteins as well as fundamental bilayer behavior. In spite of this, these structures have a relatively short lifetime and little is known about their failure mechanisms. By systematically altering the geometry and surface chemistry of microfabricated pores, we are able to isolate the importance of several distinct failure mechanisms. These include pressure fluctuations, unsupported area, surface energy of the pore wall and surface roughness. We will also demonstrate that, even when not actively controlled, these parameters can inadvertently be altered depending in processing conditions.

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