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Nanoscale characterization of solid-supported phospholipid multilayer films¹ WILFRED NGWA, ANDREW GAO, TANIA CUBANO, KEZHENG CHEN, ALOK SAHGAL, WEILI LUO, Department of Physics, University of Central Florida — Using atomic force microscopy (AFM) and the auxiliary molecular force probe (MFP) technique, we have studied the structure and nanomechanical response to nano-indentation of multilayered films of dioleoylphosphatidylcholine (DOPC) films prepared by solution spreading, spin-coating and capillary methods. Estimates for the Young's modulus for the different methods are found to be similar for sufficiently thick films. Our results demonstrate that previously reported estimates for the Young's modulus of adsorbed vesicles and lipid bilayers (membranes) by scanning probe techniques are ostensibly affected by the coupling of the substrate. Failure and self-healing of multilamellar lipid membranes is discussed.

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