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How Water Meets a Hydrophobic Surface: Reluctantly and with Fluctuations ADELE POYNOR, Allegheny College, LIANG HONG, STEVE GRANICK, IAN ROBINSON, University of Illinois Urbana Champaign, PAUL FENTER, ZHAN ZHANG, Argonne National Laboratory — By definition hydrophobic substances hate water. Water placed on a hydrophobic surface will form a drop in order to minimize its contact area. What happens when water is forced into contact with a hydrophobic surface? One theory is that an ultra-thin low- density region forms near the surface. To investigate the existence of this layer, we have employed three surface sensitive techniques, time-resolved phase-modulated ellipsometry, surface plasmon resonance, and X-ray reflectivity. Both ellipsometry and X-ray reflectivity provide strong evidence for the low-density layer and illuminate unexpected temporal behavior.

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