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Depletion when Water meets a Hydrophobic Surface ADELE POYNOR, Allegheny College, STEVE GRANICK, University of Illinois Urbana Champaign, PAUL FENTER, Argonne National Laboratory, IAN ROBINSON, University College London — What happens when water is forced into contact with a hydrophobic surface? Our previous synchrotron X-ray reflectivity experiments (Phys. Rev. Lett., 2006) reported strong evidence for the existence of an angstrom-thick region of low-density at this interface. Here we report fresh experiments in which ethanol, a wetting fluid, is studied at these same surfaces to quantify the contribution from terminal methyl groups on the hydrophobic surface that are invisible to X-rays. The existence of a depletion layer when water meets a suitably hydrophobic surface is confirmed. Better quantification of its thickness emerges.

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