

Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Ultrafast response of water near hydrophobic and hydrophilic surfaces CHANG-KI MIN, JUAN GUAN, SUNG CHUL BAE, DAVID CAHILL, STEVE GRANICK, University of Illinois at Urbana-Champaign — Ultrafast response of water near hydrophobic and hydrophilic surfaces is investigated by femtosecond pump-probe ellipsometry. Pump and probe pulses are from a dual Ti:sapphire laser with stable difference repetition rate. Every difference repetition rate, time delay is swept the whole pulse-to-pulse interval without an optical delay stage. Pump pulses induce heating and acoustic vibration to a Pd surface. The Pd surface is modified by thiol chemistry. Thiols with $-OH$ and $-CH_3$ end groups generate uniform hydrophilic and hydrophobic surfaces, and these mixtures modulate hydrophobicity two-dimensionally. Probe pulses with circular polarization impinge at the Brewster's angle and are analyzed by a polarizer. The transient ellipticity shows a refractive index change of water by thermal conductance and novel insight into the peculiar qualities of interfacial water.

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Date submitted: 21 Nov 2008

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