

Abstract Submitted
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Asphaltenes adsorption on functionalized substrates PHILIPPE BOURRIANNE, HENRI-LOUIS GIRARD, MIT - Department of Mechanical Engineering, DAYONG CHEN, MIT - Department of Chemical Engineering, KRIPA VARANASI, MIT - Department of Mechanical Engineering, ROBERT COHEN, MIT - Department of Chemical Engineering, GARETH MCKINLEY, MIT - Department of Mechanical Engineering — Asphaltenes are aromatic heavy components of crude oil. Their presence in petroleum applications and their ability to adsorb onto various substrates can induce serious damage such as pipe clogging. We study the effect of the chemical properties of the substrate on the extent of this adsorption. Based on chemical characterizations, wetting studies and roughness estimations, we develop different tools to investigate the deposition of those molecules. Then, we quantify the adsorption based on various techniques including QCM and ellipsometry. We discuss the effect of roughness on those results and suggest a possible mechanism for this adsorption.

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