



Wolfson Department of Chemical Engineering Seminar

Lecture Hall 6, Wolfson Department of Chemical Engineering,

October 28, 2015, Wednesday, 13:30

Professor Eli Rubin Memorial Lecture

by

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"Adventures of Fluids meeting a Solid"

A large variety of systems and processes involve contact of liquid, fluid (gas/vapor or another immiscible liquid), and solid. Wetting and non-wetting by drops, dewetting by gas bubbles, and heterogeneous liquid-vapor nucleation are most prominent examples. In this talk, an overview of open and/or controversial questions in the field will be given. The adventures to be discussed will include:

- calculation of interfacial tension – which correlation is preferred?
- measurement of contact angles – why a simple procedure is actually quite complex?
- status of the Wenzel and Cassie equations – wrong or just good approximation?
- non-wettable ("super-hydrophobic") surfaces – convex or concave roughness?

Literature:

1. Marmor, A., Valal, D.: Correlating Interfacial Tensions with Surface Tensions: A Gibbsian Approach, *Langmuir* **26**, 5568-5575 (2010)
2. Marmor, A., Solid Surface Characterization by Wetting, *Ann. Rev. Mat. Res.*, 39, 473-489, (2009)
3. Wolansky, G. and Marmor, A., The Actual Contact Angle on a Heterogeneous Rough Surface in Three Dimensions, *Langmuir* **14**, 5292-5297 (1998)
4. Marmor, A., Bittoun, E.: When Wenzel and Cassie Are Right: Reconciling Local and Global Considerations, *Langmuir* **25**, 1277-1281 (2009)
5. Marmor, A., Wetting on Hydrophobic Rough Surfaces: to be Heterogeneous or not to be?, *Langmuir* **19**, 8343-8348 (2003)
6. Marmor, A.: From Hydrophilic to Superhydrophobic: Theoretical Conditions for Making High-Contact-Angle Surfaces from Low-Contact-Angle Materials, *Langmuir* **24**, 7573-7579 (2008)
7. Marmor, A., Hydro- hydro- oleo- omni-phobic? Terminology of wettability classification, (Opinion) *Soft Matter* **8**, 6867-6870, (2012)

Refreshments served at 13:15