

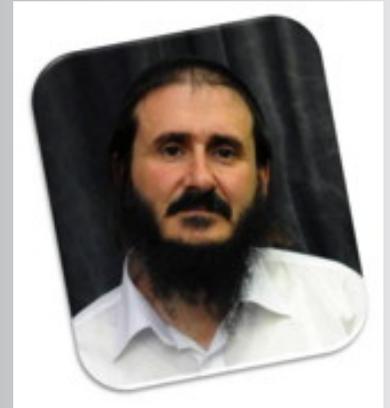
Liquid Marbles -Fascinating Non-Stick Droplets

BY Edward Bormashenko

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ABSTRACT: Liquid marbles are non-stick droplets wrapped by micro- or nanometrically scaled particles. Liquid marbles present an alternative to lotus-like inspired superhydrophobicity. Marbles are separated from solid or liquid support by air pockets in a way similar to Leidenfrost droplets. This fact determines the unusual non-Amontonian friction inherent for liquid marbles. Scaling laws governing the marbles' shape and dynamics are presented. Liquids and powders used for fabrication of liquid marbles are surveyed. The effective surface tension of liquid marbles is discussed. Floating of liquid marbles is reported. The lecture reviews properties and applications of liquid marbles. Actuation of liquid marbles with electric and magnetic fields is discussed. Janus, composite and sandwich liquid marbles are presented. Liquid marbles demonstrate a potential as micro-reactors, micro-pumps, pH, gas and water pollution sensors. Challenges and trends of future investigations in the field are envisaged.

BIOGRAPHY: Edward Bormashenko is a Professor of Physics and Materials Science and the Head of the Laboratory of Polymers in Ariel University in Israel. Research interests include: wetting phenomena, surface science, superhydrophobicity, wetting transitions, processes of self-assembly, polymer science, soft matter physics and interaction of plasma with organic materials. He is the author of more than 120 publications in these fields and the monograph "Wetting of Real Surfaces". In the last decade he has devoted his research activity to the interfaces with prescribed wettability including non-wetted surfaces and non-stick droplets. His work has been cited over 1750 times with an h-factor of 25 (ISI).



EVENT DETAILS

DATE:

January 15, 2014

TIME:

1:00 PM

LOCATION:

Carnegie 315
Stevens Institute of
Technology

ATTENDANCE:

Public