



Library Indian Institute of Science Education and Research Mohali



DSpace@IISERMohali (/jspui/)
/ Publications of IISER Mohali (/jspui/handle/123456789/4)
/ Research Articles (/jspui/handle/123456789/9)

Please use this identifier to cite or link to this item: <http://hdl.handle.net/123456789/2848>

Title:	Interferometric technique for nanoscale dynamics of fluid drops on arbitrary substrates
Authors:	Verma, Gopal (/jspui/browse?type=author&value=Verma%2C+Gopal) Pandey, M. (/jspui/browse?type=author&value=Pandey%2C+M.) Singh, K.P. (/jspui/browse?type=author&value=Singh%2C+K.P.)
Keywords:	Interferometric nanoscale dynamics fluid drops
Issue Date:	2015
Publisher:	American Institute of Physics Inc.
Citation:	Journal of Applied Physics, 118(3)
Abstract:	We demonstrate a simple interferometric probe to detect nanoscale dynamics of sessile fluid drops on arbitrary rough or flexible substrates. The technique relies on producing high-contrast Newton-ring like dynamical fringes by interference between a weak Fresnel reflection from the air-fluid interface of the drop and an air-glass interface of a convex lens placed above the drop in quasi-normal geometry. By analyzing the dynamical fringes, we observed 100–700 nm/s fluctuations in water drops evaporating on metal, leaves, insect wing, and sand paper due to their surface roughness. Similar fluctuations were also observed during spreading of non-volatile glycerin drops on various rough surfaces. Another application of the technique is demonstrated in precision measurement of change in evaporation rate of a water drop due to cooling of a metal substrate. This technique can be further miniaturized with a microscope objective with potential for wide applications.
URI:	https://aip.scitation.org/doi/10.1063/1.4926858 (https://aip.scitation.org/doi/10.1063/1.4926858) http://hdl.handle.net/123456789/2848 (http://hdl.handle.net/123456789/2848)
Appears in Collections:	Research Articles (/jspui/handle/123456789/9)

Files in This Item:

File	Description	Size	Format
Need to add pdf.odt (/jspui/bitstream/123456789/2848/1/Need%20to%20add%20pdf.odt)		8.63 kB	OpenDocument Text

[View/Open \(/jspui/bitstream/123456789/2848/1/Need%20to%20add%20pdf.odt\)](#)

[Show full item record \(/jspui/handle/123456789/2848?mode=full\)](#)

[Statistics \(/jspui/handle/123456789/2848/statistics\)](#)

Items in DSpace are protected by copyright, with all rights reserved, unless otherwise indicated.

