



Tiny ERP



Teste Grátis Por 30 Dias

AIP

 Journal of Applied Physics

HOME

BROWSE

MORE ▼

[Home](#) > [Journal of Applied Physics](#) > [Volume 114, Issue 17](#) > [10.1063/1.4829003](#)

< PREV

NEXT >



No Access

Submitted: 27 August 2013

Accepted: 21 October 2013

Published Online: 06 November 2013

Microcavity-array superhydrophobic surfaces: Limits of the model

Journal of Applied Physics **114**, 174911 (2013); <https://doi.org/10.1063/1.4829003>M. C. Salvadori^{1, a)}, M. R. S. Oliveira², R. Spirin³, F. S. Teixeira¹, M. Cattani¹, and I. G. Brown⁴[View Affiliations](#)[View Contributors](#)

Topics ▼

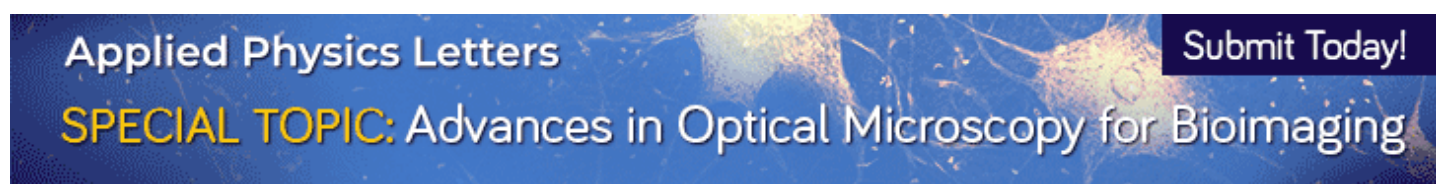
 PDF

ABSTRACT

Superhydrophobic surfaces formed of microcavities can be designed with specific desired advancing and receding contact angles using a new model described by us in prior work. Here, we discuss the limits of validity of the model, and explore the application of the model to surfaces fabricated with small cavities of radius 250 nm and with large cavities of radius 40 μm . The Wenzel model is discussed and used to calculate the advancing and receding contact angles for samples for which our model cannot be applied. We also consider the case of immersion of a sample containing microcavities in pressurized water. A consideration that then arises is that the air inside the cavities can be dissolved in the water, leading to complete water invasion into the cavities and compromising the superhydrophobic character of the surface. Here, we show that this effect does not destroy the surface hydrophobia when the surface is subsequently removed from the water.

ACKNOWLEDGMENTS

This work was supported by the Fundação de Amparo a Pesquisa do Estado de São Paulo (FAPESP) and the Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq), Brazil.



Resources

AUTHOR

LIBRARIAN

ADVERTISER

General Information

ABOUT

CONTACT

HELP

PRIVACY POLICY

TERMS OF USE

FOLLOW AIP PUBLISHING:



Website © 2022 AIP Publishing LLC.

Article copyright remains as
specified within the article.

Scitation

-



 PDF