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Nanobubble assisted changes of surface nanomorphology

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Abstract

Nanobubbles and micropancakes are formed at the interface of aqueous solution and the hydrophobic surface. Compact and smooth polystyrene (PS) film spin coated on Si/SiO_2 wafer was used as a hydrophobic supporting surface with sub-nanometer roughness. In our presentation we show nanobubble-assisted nanopatterning of polystyrene surface exposed to aqueous media under conditions when nanobubbles are formed. The fact, that the position of polystyrene nanoprotrusions corresponds with position of nanobubbles, allows us to study nanobubble existence by ex situ AFM. Relatively short time interval of nanobubble-assisted imprint formation allows us to investigate the dynamics and mechanism of nanobubble creation. We demonstrate in this work, that ex post, ex situ AFM imaging of PS surface after its exposition to nanobubbles in deionized water represents suitable technique for examination nano- and microbubble formation, distribution and arrangement without influence of AFM scanning tip and avoiding the in situ AFM imaging complications respectively.

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Biography

Hana Tarabkova received her PhD degree from Faculty of Science, Charles University in Prague in 2003. Since then she has worked as a staff scientist in Department of Electrochemical Materials at the J. Heyrovsky Institute of Physical Chemistry, Academy of Science of the Czech Republic. Her research interests are focused on characterization of nanostructured materials by scanning probe microscopy both *ex situ* and *in situ* as well as in combination with electrochemical methods.