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Nanobubbles on a Graphite surface immersed in Water: Effect of temperature OBAFEMI OTELAJA, Department of Electrical and Computer Engineering, Howard University, SILVINA GATICA, PRABHAKAR MISRA, Department of Physics, Howard University — Nanobubbles form on the surface of some solids immersed in a liquid, either spontaneously or by induction. Although their existence has been debated for some time, Atomic Force Microscopy (AFM) observations have confirmed their formation. These bubbles range in size from 10 to 100 nanometers and have important implications for the properties of the interfaces and may be responsible for long-range hydrophobic attractive forces. Interestingly, the use of nanobubbles has also been proposed for the treatment of strokes using ultrasound. The formation of nanobubbles on water-solid interfaces influences the adsorption of nanoparticles and the corresponding wetting properties. One of the parameters relevant to the stability of the bubble is the contact angle, which in turn depends on the surface tensions of the substrate, liquid and vapor involved through the so-called Young's equation. We have used a quantitative model that incorporates the attraction of the substrate to calculate the contact angles, at different temperatures. We have compared our calculated results with the experimental data available in the literature.

Silvina Gatica
Department of Physics, Howard University

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