Hot Nanoparticles

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Propositions

accompanying the thesis titled

'Hot Nanoparticles'

I. The distinction between gas and vapour bubbles is only meaningful for sufficiently slow dynamics.

chapter 2 of this thesis

II. For measuring small polarization-dependent effects at the nanoscale, large polarized beams are preferable to tightly focussed polarized beams.

chapter 3 of this thesis

III. Out of equilibrium, small changes in optical properties of a single gold nanoparticle on a substrate can only be properly understood with reference to the medium *and* the substrate.

chapter 4 of this thesis

IV. Anti-Stokes photoluminescence from pulsed excitation can provide insight into the dynamics of electron thermalization in metal nanoparticles and/or nanostructures.

chapter 5 of this thesis

V. The sensitivity of the plasmon-enhanced ensemble chirality measurement presented by Maoz *et al.* is limited by the chirality and quasi-chirality of the randomly grown gold film. This limitation can, with great care, be overcome in a nanoscale measurement.

B. M. Maoz et al., Nano Lett. ***13****, 1203–1209 (2013)*

VI. The caveat given by Jones *et al.*, maintaining that different solvents produce different vapour nano- and microbubble dynamics is superfluous given the limited time resolution of the measurements justifying it.

S. Jones et al., Nano Lett. ***19****, 8294–8302 (2019)*

VII. Plasmonic nanosprings can be a promising tool for nanoscale force measurement, but only when their force response has been thoroughly and directly characterized.

B. Xiong et al., ACS Nano ***11****, 541–548 (2017)*

VIII. Optical elements created through microscale temperature control may one day lead to a 'smart' replacement for bifocal spectacles.

C. Liu et al., ACS Photonics ***6****, 422–428 (2019)*

IX. Algorithms for use in science are either trivial, open source, or not to be trusted.

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