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Hot Nanoparticles

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Citation

Jollans, T. G. W. (2020, January 30). *Hot Nanoparticles. Casimir PhD Series*. Retrieved from <https://hdl.handle.net/1887/83484>

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Title: Hot Nanoparticles

Issue Date: 2020-01-30

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.

Thomas G. W. Jollans
Leiden, 30 January 2020