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## Gold nanorod photoluminescence : applications to imaging and temperature sensing

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# Stellingen

behorende bij het proefschrift

## **GOLD NANOROD PHOTOLUMINESCENCE**

APPLICATIONS TO IMAGING AND TEMPERATURE SENSING

1. Seemingly identical nanorods can have unexpectedly different luminescence properties.  
*Chapters 2 and 4 of this thesis*
2. Even when the anti-Stokes luminescence of a gold nanorod is weaker than the Stokes luminescence, it can have a higher signal-to-background ratio.  
*Chapter 3 of this thesis*
3. The anti-Stokes emission mechanism proposed in Chapter 4 can be extended to nanoparticles with different geometries without further modifications.  
*Chapter 4 of this thesis*
4. The applications of temperature sensing through anti-Stokes luminescence are not limited to photothermal therapy.  
*Chapter 4 of this thesis*
5. Measuring the temperature of a liquid by means of surface enhanced Raman spectroscopy only allows to determine the temperature in the hotspot.  
*Pozzi et al., J. Phys. Chem. C 119, 21116-21124 (2015).*
6. The future of plasmonic enhanced fluorescence correlation spectroscopy may lie in cleverly designed nanoparticles.  
*Langguth et al., Opt. Express 22, 15397 (2014).*
7. Thermometry in living cells requires very careful data analysis and interpretation. Sloppy raw data processing may lead to artifacts and false conclusions.  
*Baffou et al., Nat. Methods 11, 899-901 (2014).*
8. Superlocalization requires more than fitting bright pixels by a Gaussian.  
*Titus et al., ACS Nano 7, 6258-6267 (2013).*
9. Gender equality at universities cannot be improved only through university hiring policies.
10. Failed research is much riskier for a PhD candidate than for someone with a permanent position.
11. It should be scientists' responsibility to bring science closer to society.
12. The *publish or perish* behavior is not imposed, it is embraced.

Aquiles Carattino  
Leiden, March 9, 2017