



Universiteit  
Leiden  
The Netherlands

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

Carattino, A.

### Citation

Carattino, A. (2017, March 9). *Gold nanorod photoluminescence : applications to imaging and temperature sensing*. *Casimir PhD Series*. Retrieved from <https://hdl.handle.net/1887/46596>

Version: Not Applicable (or Unknown)

License: [Licence agreement concerning inclusion of doctoral thesis in the Institutional Repository of the University of Leiden](#)

Downloaded from: <https://hdl.handle.net/1887/46596>

**Note:** To cite this publication please use the final published version (if applicable).

Cover Page



Universiteit Leiden



The handle <http://hdl.handle.net/1887/46596> holds various files of this Leiden University dissertation.

**Author:** Carattino, A.

**Title:** Gold nanorod photoluminescence : applications to imaging and temperature sensing

**Issue Date:** 2017-03-09

# CURRICULUM VITÆ

Aquiles Carattino was born on May 7th, 1986 in Buenos Aires, Argentina. From March 2004 until December 2010 he studied physics at the University of Buenos Aires. His undergraduate research project was carried on under supervision of Prof. Pedro Aramendía and focused on the emission anisotropy of Nile red molecules embedded in polymer thin films. After his studies, he started working as Research Assistant at Tenaris, world leader in the production of seamless steel tubes in Campana, Argentina. In October 2012 he joined the group of Prof. Michel Orrit at Leiden University to start his PhD project on the luminescence of single gold nanorods.



# LIST OF PUBLICATIONS

5. Araoz, B., **Carattino, A.**, Tauber, D., Von Borczyskowski, C. & Aramendia, P. F., *Influence of the glass transition on rotational dynamics of dyes in thin polymer films: Single-molecule and ensemble experiments*. J. Phys. Chem. A 118, 10309-10317 (2014).
4. **Carattino, A.**, Khatua, S. & Orrit, M., *In situ tuning of gold nanorod plasmon through oxidative cyanide etching*. Phys. Chem. Chem. Phys. 18, 15619-15624 (2016).
3. **Carattino, A.**, Keizer, V. I. P., Schaaf, M. J. M. & Orrit, M., *Background Suppression in Imaging Gold Nanorods through Detection of Anti-Stokes Emission*. Biophys. J. 111, 2492-2499 (2016).
2. **Carattino, A.** & Orrit, M., *Gold nanorods as nano-thermometers: Anti-Stokes Luminescence* (Manuscript in preparation)
1. **Carattino, A.** & Orrit, M., *Plasmon damping of gold nanorods at variable temperatures* (Manuscript in preparation)



# ACKNOWLEDGMENTS

The last four years of work have been marked by the help and support of many friends and colleagues to whom I want to express my most sincere gratitude. Most of the work in this thesis wouldn't have been possible without them.

Prof. Michel Orrit, my supervisor, deserves a big part of the credit for what has been done in this last four years. His support and guidance were crucial for the completion of this thesis. I learned a lot in these past years thanks to his insightful knowledge over a broad range of topics.

At the beginning of my research, dr. Pedro Navarro and dr. Saumyakhanti Khatua, two fellow members of the group, were of great importance both for scientific discussion and for me to integrate into the group. I am also grateful to the members of the project in which my PhD was framed, including dr. Aimee Boyle for the majority of the nanorod samples employed throughout the thesis, Veer Keizer for the help preparing the samples with cells that led to chapter 3 and Sara Carozza for several insightful discussions.

I am also very grateful to dr. Martín Caldarola, with whom I have shared many hours in the same dark, cold lab. Long discussions with him triggered different approaches and ideas, some of which are reflected in this thesis. He is not only a colleague but also a good friend, whose support has extended beyond the walls of the university.

I am indebted to Ferry Kruidenberg whose bachelor project gave the initial push to the software to control the setup. I am also indebted to Irina Komen, whose MSc project was part of a very challenging idea that finally didn't find its way into this thesis.

The MoNOS group has provided the perfect setting for conducting research, and I am grateful to all the members, especially to Henriëtte van Leeuwen for taking care of so much paperwork. I also thank Marco Tompitak for the translation of the summary.

Of course nothing of what happened during these last four years would have been possible without the endless love and support from my family.