



Universiteit
Leiden
The Netherlands

Two-dimensional optics : diffraction and dispersion of surface plasmons

Chimento, P.F.

Citation

Chimento, P. F. (2013, May 22). *Two-dimensional optics : diffraction and dispersion of surface plasmons*. Retrieved from <https://hdl.handle.net/1887/20901>

Version: Not Applicable (or Unknown)

License: [Leiden University Non-exclusive license](#)

Downloaded from: <https://hdl.handle.net/1887/20901>

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

Cover Page



Universiteit Leiden



The handle <http://hdl.handle.net/1887/20901> holds various files of this Leiden University dissertation.

Author: Chimento, Philip

Title: Two-dimensional optics : diffraction and dispersion of surface plasmons

Issue Date: 2013-05-22

Curriculum Vitæ

Philip Francis Chimento III

1981	Born in Raleigh, North Carolina, United States
1993–1994	Secondary education, Sherwood Githens Middle School, Durham, North Carolina, United States
1994–1999	Secondary education, Het Stedelijk Lyceum, Enschede, Netherlands
1999–2008	Bachelor's and Master's degree in applied physics Twente University, Enschede, Netherlands <i>Freshman year completed cum laude</i>
2009–2013	PhD research Leiden Institute of Physics, Leiden University, Leiden, Netherlands
2013–	Software engineer, Endless Mobile

List of Publications

- Chimento, P. F., Jurna, M., Bouwmans, H. S. P., Garbacik, E. T., Hartsuiker, L., Otto, C., Herek, J. L., & Offerhaus, H. L. (2009). High-resolution narrowband CARS spectroscopy in the spectral fingerprint region. *Journal of Raman Spectroscopy*, 40, 1229–1233.
- Chimento, P. F., 't Hooft, G. W., & Eliel, E. R. (2010). Plasmonic optical vortex analyzer. In J. Pozo, M. Mortensen, P. Urbach, X. Leijtens, & M. Yousefi (Eds.), *Proceedings of the 2010 annual symposium of the IEEE Photonics Benelux Chapter*, November 19, 2010 (pp. 17–20). 2010 Annual Symposium of the IEEE Photonics Benelux Chapter. Delft, Netherlands: Uitgeverij TNO.
- Chimento, P. F., 't Hooft, G. W., & Eliel, E. R. (2010). Plasmonic tomography of optical vortices. *Optics Letters*, 35, 3775–3777.
- Chimento, P. F., Kuzmin, N. V., Bosman, J., Alkemade, P. F. A., 't Hooft, G. W., & Eliel, E. R. (2011). A subwavelength slit as a quarter-wave retarder. *Optics Express*, 19, 24219–24227.
- Chimento, P. F., Alkemade, P. F. A., 't Hooft, G. W., & Eliel, E. R. (2012). Optical angular momentum conversion in a nanoslit. *Optics Letters*, 37, 4946–4948.
- Chimento, P. F., 't Hooft, G. W., & Eliel, E. R. (2013). When the dip doesn't tell the whole story: interpreting the surface plasmon resonance in lossy metals. Submitted to *Optics Express*.
- Chimento, P. F., 't Hooft, G. W., & Eliel, E. R. Anomalous dispersion of surface plasmons. In preparation.
- Chimento, P. F., 't Hooft, G. W., & Eliel, E. R. Enhancing the anomalous surface plasmon dispersion in aluminum. In preparation.

Acknowledgements

I WOULD MOST LIKE TO THANK the students that I had the pleasure of mentoring: Carolina Rendón Barraza, Johan Bosman, Mark Bogers, David Kok, and Tobias de Jong. They all contributed in important ways, even though the project that Carolina, David, and Tobias worked on did not make it into the publishable stage because of time constraints.

One is not allowed any more to thank one's coworkers indiscriminately, but some people deserve a mention for their contributions beyond those of the co-authors on my papers. Wolfgang Löffler's expertise is woven all throughout this book; he was always ready to bounce ideas off and share lab tips. Michiel de Dood took a special interest in the aluminum project (chapters 6 and 7) and our discussions were invaluable in understanding the solid-state physics involved. Daan Boltje put time into preparing the Kretschmann prisms used in chapter 6.

The work described in chapter 7 involved cryostats and liquid nitrogen, something I had had little experience with when I started. Jelmer Renema helped to close this experience gap, and assisted with the COMSOL heat flow simulations. Mirthe Bergman, Arjen Geluk, and others in the Fine Mechanics Department worked on the cryostat that I used and made sure it was simple, easy, and leak-free.

Philippe Lalanne, professor at the Institut d'Optique, CNRS, was willing to share the Gaussian quadrature code from their paper³⁵ which I adapted for chapter 2. Speaking of sharing computer code, I relied heavily on open source software almost from the start of this research. NumPy and SciPy³⁶ did all the number crunching. I made all the graphs in this book with Matplotlib³⁷ and the diagrams with Inkscape. I used DataThief III³⁸ to digitize printed specs of anti-reflection coatings.

³⁵ Lalanne et al., 2006.

³⁶ Jones, Oliphant, and Peterson, 2001.

³⁷ Hunter, 2007.

³⁸ Tummers, 2006.

