

---

# Near-field optical imaging of Plasmonic Waveguides

Matthieu Roblin<sup>\*1</sup>, Sylvain Girard<sup>1</sup>, Hervé Gilles<sup>1</sup>, Mathieu Laroche<sup>1</sup>, Julien Cardin<sup>1</sup>,  
Christian Dufour<sup>1</sup>, and Ulrike Lüders<sup>2</sup>

<sup>1</sup>Centre de recherche sur les Ions, les Matériaux et la Photonique (CIMAP-ENSICAEN) – UMR 6252  
CEA-CNRS-ENSICAEN – Université de Caen 14050 Caen, France

<sup>2</sup>Laboratoire de cristallographie et sciences des matériaux (CRISMAT) – UMR 6508 CNRS-ENSICAEN  
– Université de Caen 14050 Caen, France

## Abstract

The goal of the present work concerns the development of innovative Surface Plasmon-Polariton (SPP) components operating in the telecom spectral domain near a wavelength of 1.55  $\mu\text{m}$ . Different dielectric-loaded SPP waveguides based on structured polymer layer on the top of thin gold film have been processed by e-beam lithography. The optical properties are experimentally characterized using a scanning near-field optical microscope (SNOM) operating by laser feedback interferometry. This experimental setup gives access simultaneously to the sample topography and the spatial distribution of the optical field of the SPP with a subwavelength spatial resolution.

---

<sup>\*</sup>Speaker