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Nano-Optics in a Scanning Transmission Microscope, features and applications.

The interest for single photon emitters (SPE) has tremendously grown over the last decades, due to their possible application in quantum information. Characterizing them requires performing an intensity interferometry experiment. In order to study them at a nanometer scale we have developed a cathodoluminescence-based intensity interferometry experiment with deep sub-wavelength resolution. We will present results on a new UV SPE in Boron Nitride. Differences between photoluminescence and cathodoluminescence related to specificity of the electron beam material interaction will be discussed. We will conclude on the possible application of this technique to measure lifetime at the nanometer scale.