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Fabrication on Plasmonic Nanostructures in Photoelectronic Devices

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Plasmonics include various aspects of surface plasmons, which utilize light-metal interactions. In applications, surface plasmon polaritons (SPPs) and the near field from localized surface plasmon resonances (LSPRs) can be beneficial for light absorption as well as electrical characteristics of photoelectronic devices. The utilization of plasmonic metal nanoparticles (NPs) is frequently proposed as a means to further enhance the light absorption in the broad wavelength range as well as to facilitate charge collection and transport in the photoelectronic devices. Therefore, it is of crucial importance to fabricate suitable plasmonic nanostructures and investigate their fundamentals in photoelectronic devices. Advanced scattering methods such as grazing incidence small/wide-angle x-ray scattering (GISAXS and GIWAXS) were used to study plasmonic structures implemented in photoelectronic devices.

Primary author: Mr GUAN, Tianfu

Co-authors: Dr CHEN, Wei; Mr GUO, Renjun; Mr LIANG, Suzhe; L. WEINDL, Christian; Mrs LI, Nian; Prof. MÜLLER-BUSCHBAUM, Peter

Presenter: Mr GUAN, Tianfu

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