# Optically active plasmonic networks: transporting energy at the nanoscale

The objective of this project is to prepare and investigate **surface-activated metallic nanostructures**, capable to **guide**, **switch, modulate** and **amplify** light propagating within sub-nanoscopic plasmonic waveguides for diffractionless, integrated optoelectronic applications. Such a nanostructures will consist of thin (diameter of about 100 nm) but relatively long (10-20 μm) **silver nanowires**, capable to support **surface plasmon polaritons** – electronic excitations localized on a metal-dielectric interface, capable to guide the energy. In order to control properties of the polaritons, surface of the nanowires will be **locally activated** (decorated) by appropriate **single nanoemitters**. Due to interaction between polaritons and nanocrystals, transmitted signal will be controlled and modified. Depending on the nanocrystals properties, it will be possible to achieve induced absorption of the radiation or its amplifications. Thus, presented surface-activated metallic nanostructures, featuring functionality of classical modulators or amplifiers, will contribute to the further development of plasmonic networks, used for various optoelectronic circuits, i.e. nanosensors.