

## **IR spectroscopy and preparation of nanoslits in metal thin films**

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Metal nanostructures allow manipulating light on a sub-wavelength length scale. We investigated the IR-optical properties of single nanosized slits in metal thin films. These nanoslits were prepared in ultrathin Au films on various substrates by applying a shadowing technique using nanowires as masks. Single nanoslits were investigated by infrared spectroscopic microscopy. The nanoslits with a width of a few hundred nanometers and a length in the 10  $\mu\text{m}$  range show a transmission which increases with frequency and which exceeds the transmission of the continuous Au film in the mid-infrared range. We compare this behaviour to calculations of the small-slit transmission coefficient from classical electromagnetic scattering theory.