

## **Resonances of individual metal nanowires in the infrared**

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With infrared spectroscopic microscopy using synchrotron light, the authors studied resonant light scattering from single metal nanowires with diameters in the 100 nm range and with lengths of a few microns. The Au and Cu nanowires were electrochemically grown in polycarbonate etched ion-track membranes and transferred on infrared-transparent substrates. Significant antennalike plasmon resonances were observed in good agreement with exact light-scattering calculations. The resonances depend not only on length and diameter but also on the dielectric surrounding of the nanowire. The observed maximum extinction at resonance corresponds to an electromagnetic far-field enhancement by a factor of about 5.