Plasmonic Photothermal Effect in Metal Nanostructures

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When light is guided through any plasmonic structures, the inevitable absorption by metal is ultimately converted to heat, which is photothermal effect. Photothermal effects in plasmonic nanostructures have great potentials in applications including photothermal cancer therapy, optical data storage, thermo-photovoltaics, nanofluidics, etc. In this talk, I will first show the principle of photothermal effect. Then strong photothermal effect assisted by engineering the absorption in plasmonic nanostructures will be presented. After that, typical applications of photothermal effect, including metal nanocrystal formation, photothermal modulation, plasmonic nanowelding and thermal emission, will be reviewed.