

# Plasmonic Bowtie Nanolaser Arrays

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Lasing from an electromagnetic hot spot supported by coupled metal nanoparticles (NPs) has been demonstrated for the first time. This new nanolaser architecture is based on three dimensional (3D) Au bowtie NPs supported by an organic gain material. The extreme field compression, and thus ultra-small mode volume, within the bowtie gap produced laser oscillations at the localized surface plasmon resonance gap mode of the 3D bowties. Transient absorption measurements confirmed ultrafast resonant energy transfer between the photo-excited dye molecules and gap plasmons on the picosecond time scale.

