Enhanced Photoluminescence Emission from Monolayer MoS_2 Using Single Plasmonic Antenna

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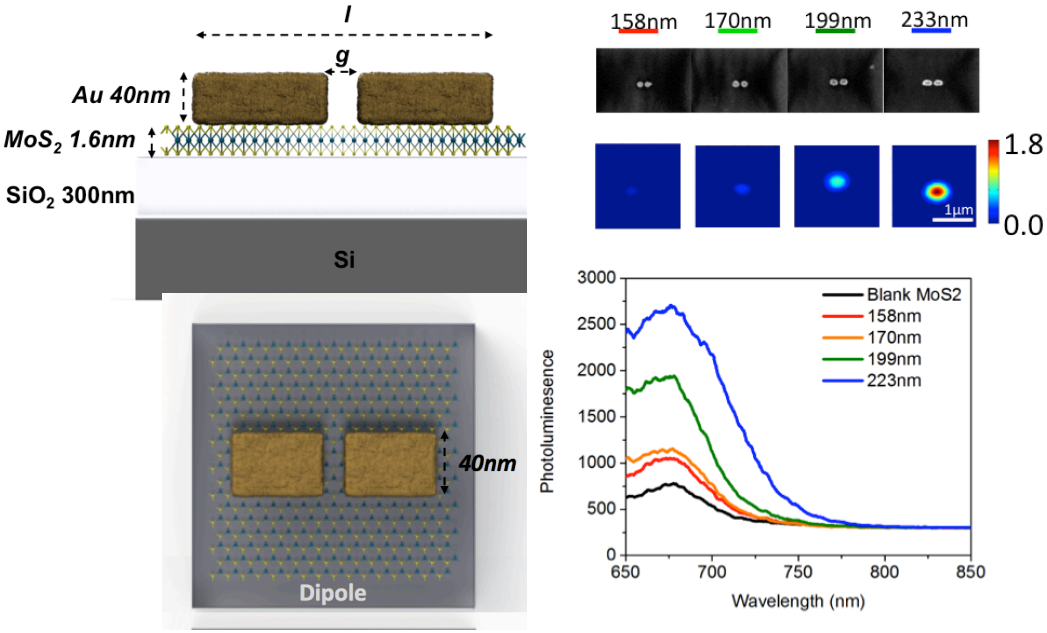
Two-dimensional materials have been receiving wide attention for applications in semiconductor optoelectronics, however monolayer thickness limits the light-matter interactions resulting in poor light emission and absorption. Aydin group recently demonstrated enhanced light emission from plasmonic nanodisk arrays due to localized surface plasmon resonances. In a collaborative effort between Aydin and Lauhon groups, single dipole and bowtie gold nanoantennas with sub-20nm gaps have been shown to increase photoluminescence emission from a monolayer MoS_2.



Single optical antenna fabricated on a monolayer MoS_2 enhances PL emission up to 4x times.

S. Butun et al., ***Nano Letters*** 15, 2700 (2015).

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