

# SPRING 2017 GRADUATE STUDENT SEMINAR SERIES

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## Neville 3 Localized Surface Plasmon Resonance within Noble-Metal Nanoframes and Its Applications

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Unlike other types of hollow nanostructure, nanoframe is only composed of corners and edges, which gives rise to its highly open architecture. In this seminar, we will focus on one unique optical property that originates from the structure of nanoframe – the localized surface plasmon resonance (LSPR). LSPR properties of nanoframes are determined by many parameters, such as size, shape, aspect ratio in terms of perimeter/width of edge and dielectric environment, which makes plasmonic features of nanoframes highly controllable and tunable. This unique plasmonic property of nanoframes can be useful in many light-induced processes. Nanoframes have already shown their capability for the molecular sensing, the signal for surface-enhanced Raman spectroscopy (SERS) can be enhanced even more with the help of substrate made of Au nanoframes. In photocatalysis, Ag@AgCl nanoframes are found to have superior photocatalytic activity to normal Ag and Ag@AgCl nanocubes under visible light irradiation. In a nutshell, noble-metal nanoframes promise a great potential in various plasmonic applications that require surface-enhancement thanks to their tunable LSPR.

### References:

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