

# Dynamic of two quantum emitters coupled to localized surface plasmons

Po-Chen Kuo<sup>1</sup>

<sup>1</sup>*Department of Physics, National Cheng Kung University, Tainan 70101, Taiwan*

We theoretically study the dynamic of coupling and energy transfer between two quantum emitters embedded inside a homogeneous dielectric by considering the different orientation of the transition dipole moment involved. We show the controllable energy transfer by fine adjustment of transition dipole moment orientation. We find out that when quantum emitters placed near a metal nanoparticle, strong coupling between quantum emitters and localized surface plasmons appears and the dynamics of quantum emitters is dramatically changed. Also, the associated reversible exchange of energy occurs between the quantum emitters. Therefore, our exploration opens new possibilities for the enhancement of energy transfer between the quantum emitters via the strong coupling to localized surface plasmons in appropriate coupling region.