Fano resonances from plasmon-exciton coupling in hetero-bilayer WSe₂-WS₂ on Au nanorod arrays

External User Project - 2020

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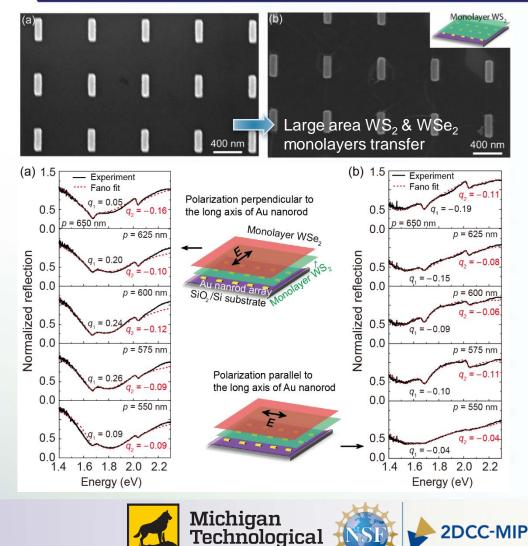
MIP: 2DCC at Penn State University,

Plasmon-exciton coupling in hetero-bilayer of WSe₂ and WS₂ transferred onto Au nanorod arrays is studied. Dark-field scattering measurements reveal that the in-plane dipole moment of excitons in monolayer WS₂ allows only the narrow spectral range of 30 nm for the resonant coupling between the localized particle plasmons from Au nanorods and the bright excitons from WS₂. We demonstrate that the q-parameter that represents the asymmetry of Fano resonances from plasmon-exciton coupling can be controlled by the polarization states of incident light. Surface lattice resonances in between individual Au nanorods play a role to diminish the damping factor of plasmon-exciton coupling in the arrays.

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