Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Probing excitonic emission in 2D semiconductors with plasmon-assisted spectroscopy ALEXANDER HIGH, YOU ZHOU, GIOVANNI SCURI, ALAN DIBOS, CHI SHU, KRISTIAAN DE GREVE, MARK POLKING, DOMINIK WILD, LUIS JUAREGUI, ANDREW JOE, KATERYNA PISTUNOVA, MIKHAIL LUKIN, PHILIP KIM, HONGKUN PARK, Harvard University — Surface plasmon polaritons (SPPs) exhibit electromagnetic fields that are strongly polarized perpendicular to the metal surfaces on which they propagate. As a result, coupling of dipole emission into SPPs can be utilized as a direct probe of dipole orientation. Furthermore, coupling into SPPs can significantly enhance emission rates due to the reduced SPP mode volume. In this work, we couple transition metal dichalcogenide monolayers, which are two dimensional semiconductors, to silver films by mechanical stamping, and study the relative emission of excitonic states into free space versus SPPs. In addition to regular excitons that have been observed previously, we also observe additional emissive states that exhibit highly selectively coupling to SPPs. We will discuss the origin of these states.

Alexander High
Harvard University

Date submitted: 11 Nov 2016 Electronic form version 1.4