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Femtosecond Carrier Dynamics in Gold-MoS_2 Hybrid Nanostructures CHLOE DOIRON, XUEJUN LIU, HOSSEIN ROBATJAZI, ISABELL THOMANN, Department of Electrical and Computer Engineering, Rice University — Small plasmonic nanoparticles are known to efficiently generate energetic hot carriers [1] that can be harnessed by injecting them across a Schottky barrier. To understand the role of plasmon-induced hot carrier generation across Schottky junctions in photocatalytic processes, we synthesized quasi-2D MoS_2 monolayer flakes decorated with Au nanoparticles in ethanol. Our goal is to study ultrafast plasmon induced electron injection from Au nanospheres into MoS_2 monolayer flakes. We will present femtosecond transient absorption measurements on MoS_2/Au hybrid nanoparticles in ethanol solvent, and compare them with neat MoS_2 flakes in ethanol.
[1] Nano Letters, 2015, 15 (9), p 6155

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