Optoelectronics of transition metal dichalcogenides decorated with gold nanoparticles\(^1\) S.B. DIEFENBACH, E. PARZINGER, J. KIEMLE, B. MILLER, J. WIERZBOWSKI, R. CSIKI, A. CATTANI-SCHOLZ, M. STUTZMANN, J.J. FINLEY, U. WURSTBAUER, A.W. HOLLEITNER, WSI and Physics Department, TUM, 85748 Garching, Germany — We report on Raman and photoluminescence experiments on monolayers (ML) of MoS\(_2\) and WSe\(_2\), covered with octanethiole stabilized gold nanoparticle arrays. We observe an enhanced photoluminescence signal due to the decoration with gold nanoparticle arrays. Power-dependent Raman scattering experiments show a decrease of the normalized Raman intensity of the \(\text{A}_{1g}\) and \(\text{E}_{2g}\) phonon mode for gold nanoparticle decorated MLs.

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