

Near field Raman scattering in Molybdenum disulfide

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Abstract: Tip enhanced Raman scattering (TERS) employs the tip of a probe, under distance feedback with an ultraclose surface[1]. The resulting interactions amplify the intensity of vibrational Raman scattering of molecules on the surface. Although a general understanding of the TERS process is still to be elucidated, scanning tunneling feedback is often used in TERS with a noble metal tip and substrate. The possibility of tunneling induced plasmonic fields is investigated. The results of these investigations together with TERS of a 2D resonant, MoS₂ molecular system[2] are compared. Data on multiple excitation wavelengths of the resonant system in the near (TERS) and far-field are interpreted as arising from weak coupling interactions. This could explain the TERS enhancement within the framework of conventional resonance Raman scattering.

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References:

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[2] A. Michail, N. Delikoukos, J. Parthenios, C. Galiotis and K. Papagelis, *Appl. Phys. Lett.* 108, 173102 (2016)