

Abstract Submitted
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3d crystal field excitations in iron pnictides studied by Raman spectroscopy TAO ZHOU, ZHEN QIN, SEAN O'MALLEY, KWOK LO, New Jersey Institute of Technology, CHENGLIN ZHANG, SANG-WOOK CHEONG, Rutgers University — We have measured the Raman spectra of $\text{LaFeAsO}_{1-x}\text{F}_x$ ($x = 0, 0.1$ and 0.33) as well as AFe_2As_2 ($A = \text{Ca}, \text{Sr}, \text{Ba}$) polycrystalline samples at different temperatures. We found that in addition to the phonon excitations at low frequency below 250 cm^{-1} , there are many strong excitations in the range between 250 cm^{-1} and 1000 cm^{-1} . We attribute them to the crystal field excitations of Fe 3d electrons. The temperature and doping dependence of these excitations will be presented, and possible implications for the physics model of this new high temperature superconductor family will be discussed.

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