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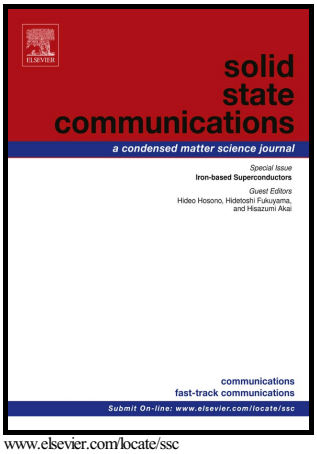

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Raman spectroscopy of optical phonon and charge density wave modes in 1T-$TiSe_2$ exfoliated flakes

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Abstract: 1T-$TiSe_2$ is a model transition metal dichalcogenide material that develops charge density waves (CDWs). Here we present variable-temperature Raman spectroscopy study on both CDW and optical phonon modes of 1T-$TiSe_2$ thin layers exfoliated onto SiO_2 substrate. Raman scattering intensities of all modes reach a maximum when the sample thickness is about 12 nm. This phenomenon can be explained by optical interference effect between the sample and the substrate. The CDW amplitude modes experience redshift and broadening as temperature increases. We extract CDW transition temperature (T_{CDW}) from temperature dependence of the