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Strongly-bound excitons and trions in anisotropic 2D ...

Optical properties of charged excitons in two-dimensional ...

Strongly-bound excitons and trions in anisotropic 2D semiconductors Sangho Yoon^{1,2†}, Taeho Kim^{1,2†}, Seung-Young Seo^{1,2}, Seung-Hyun Shin³, Su-Beom Song^{1,2}, B. J. Kim^{2,3}, Kenji Watanabe⁴, Takashi Taniguchi⁵, Gil-Ho Lee³, Moon-Ho Jo^{1,2}, Diana Y. Qiu^{6*}, Jonghwan Kim^{1,2,3*} ¹ Department of Materials Science and Engineering, Pohang University of Science and

Excitons in a single two-dimensional semiconductor crystal ...

As will become apparent, excitonic effects in low-dimensional semiconductors are hugely enhanced. The reason is that excitonic effects originate from the attractive interaction between electrons and holes. The stronger the attraction, the more pronounced the excitonic corrections to the response. In 2017 Kogar et al. found "compelling evidence" for observed excitons condensing in the three-dimensional semimetal 1T-TiSe₂. Spatially direct and indirect excitons. Normally, excitons in a semiconductor have a very short lifetime due to the close proximity of the electron and hole.

Low-Dimensional Semiconductors in Artificial ...

Excitons in Low-Dimensional Semiconductors - Theory ...

OSA | Single-photon emission from localized excitons in an ...

Confinement of excitons in low-dimensional structures leads to a strong enhancement of excitonic effect. They have impact on optical properties of these structures up to room temperature even for materials with low excitonic binding in the bulk. We will start in this chapter with the properties of excitons in quasi-2D structures (quantum wells).

Electron-Hole Interactions. Induced by the promoted interactions between photoinduced electrons and holes, excitonic effects could be prominent and general in low-dimensional semiconductors. As a result, excitons will be dominating photoinduced species that coexist with charge carriers (that is, electrons and holes).

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Valley excitons in two-dimensional semiconductors ...

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Carsten Deibel, in Semiconductors and Semimetals, 2011. 2.3 Charge Transfer and Energy Transfer. Singlet excitons can be dissociated into polarons—charges leading to an ultrafast reorganization of the nonrigid organic molecules on which they reside—by charge transfer. Thus, only one of the two constituents of an exciton, electron or hole, migrate to another molecule.

Excitons - an overview | ScienceDirect Topics

Theoretical and experimental results on excitonic effects in monomolecular layers of transition metal dichalcogenides are reviewed. These two-dimensional semiconductors exhibit a direct bandgap of about 2 eV at the Brillouin zone edges, and the binding energies of their neutral and charged exci-

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