

## REFERENCES

## REFERENCES

- Andor, K., Guido, B., Martin, G., Jaroslav, F., Viktor, Z., Neil, D., and Vladimir F. (2015). K-P theory for two-dimensional transition metal dichalcogenide semiconductors. *2D Materials*, 2(2), 022001.
- Berkelbach, T. C., and Reichman, D. R. (2018). Optical and excitonic properties of atomically thin transition-metal dichalcogenides. *Annual Review of Condensed Matter Physics*, 9, 379-396.
- Bhanu, U., Islam, M. R., Tetard, L., and Khondaker, S. I. (2014). Photoluminescence quenching in gold - MoS<sub>2</sub> hybrid nanoflakes. *Scientific Reports*, 4(1), 5575.
- Cho, B., Hahm, M. G., Choi, M., Yoon, J., Kim, A. R., Lee, Y. J., ... and Kim, D. H. (2015). Charge-transfer-based gas sensing using atomic-layer MoS<sub>2</sub>. *Scientific reports*, 5(1), 8052.
- Citrin D.S. (1993). Radiative lifetime of excitons in quantum well: Localization and phase – coherence effect. *Physical review B*, 47(7), 3832.
- Christopher, J. W., Goldberg, B. B., and Swan, A. K. (2017). Long tailed trions in monolayer MoS<sub>2</sub>: Temperature dependent asymmetry and resulting red-shift of trion photoluminescence spectra. *Scientific reports*, 7(1), 14062.
- Coehoorn, R., Haas, C., Fipse, C.J., Groot, R.A., and Wold, A. (1987). Electronic structure of MoSe<sub>2</sub>, MoS<sub>2</sub>, and WSe<sub>2</sub>. I. Band-structure calculations and photoelectron spectroscopy. *Physical review B*, 35(12), 6195.
- Dickinson, R. G., and Pauling, L. (1923). The crystal structure of molybdenite. *Journal of the American Chemical Society*, 45(6), 1466-1471.
- Echeverry, J. P., Urbaszek, B., Amand, T., Marie, X., and Gerber, I. C. (2016). Splitting between bright and dark excitons in transition metal dichalcogenide monolayers. *Physical Review B*, 93(12), 121107.
- Ellliott, R.J. (1957). Intensity of Optical Absorption by Excitons. *Physical review*, 108(6), 1384.

- Ellis, J. K., Lucero, M. J., and Scuseria, G. E. (2011). The indirect to direct band gap transition in multilayered MoS<sub>2</sub> as predicted by screened hybrid density functional theory. *Applied physics letters*, 99(26), 261908.
- Frindt, R. F., and Yoffe, A. D. (1963). Physical properties of layer structures: optical properties and photoconductivity of thin crystals of molybdenum disulphide. *Proceedings of the Royal Society of London. Series A. Mathematical and Physical Sciences*, 273(1352), 69-83.
- Ganatra, R., and Zhang, Q. (2014). Few-layer MoS<sub>2</sub>: a promising layered semiconductor. *ACS nano*, 8(5), 4074-4099
- Geim, A. K., and Grigorieva, I. V. (2013). Van der Waals heterostructures. *Nature*, 499(7459), 419-425.
- Hill, H. M., Rigosi, A. F., Rim, K. T., Flynn, G. W., and Heinz, T. F. (2016). Band alignment in MoS<sub>2</sub>/WS<sub>2</sub> transition metal dichalcogenide heterostructures probed by scanning tunneling microscopy and spectroscopy. *Nano letters*, 16(8), 4831-4837.
- Joensen, P., Frindt, R. F., and Morrison, S. R. (1986). Single-layer MoS<sub>2</sub>. *Materials research bulletin*, 21(4), 457-461.
- Kang, N., Paudel, H. P., Leuenberger, M. N., Tetard, L., and Khondaker, S. I. (2014). Photoluminescence quenching in single-layer MoS<sub>2</sub> via oxygen plasma treatment. *The Journal of Physical Chemistry C*, 118(36), 21258-21263.
- Kautsky, H. (1939). Quenching of luminescence by oxygen. *Trans. Faraday Soc.*, 35, 216–219.
- Ke, J. A., Garaj, S., and Gradecak, S. (2019). Nanopores in 2D MoS<sub>2</sub>: defect-mediated formation and density modulation. *ACS applied materials & interfaces*, 11(29), 26228-26234.
- Komsa, H. P., Kotakoski, J., Kurasch, S., Lehtinen, O., Kaiser, U., and Krasheninnikov, A. V. (2012). Two-dimensional transition metal dichalcogenides under electron irradiation: defect production and doping. *Physical review letters*, 109(3), 035503.
- Kretschmer, S., Lehnert, T., Kaiser, U., and Krasheninnikov, A. V. (2020). Formation of defects in two-dimensional MoS<sub>2</sub> in the transmission electron microscope at

- electron energies below the knock-on threshold: the role of electronic excitations. *Nano letters*, 20(4), 2865-2870.
- Kuc, A., Zibouche, N., and Heine, T. (2011). Influence of quantum confinement on the electronic structure of the transition metal sulfide TS<sub>2</sub>. *Physical review B*, 83(24), 245213.
- Kumar, R. (2020). Chemical Vapor Deposition Grown MoS<sub>2</sub> for Sensing Applications (Doctoral dissertation, Indian Institute of Technology Jodhpur).
- Kumar, R., Zheng, W., Liu, X., Zhang, J., and Kumar, M. (2020). MoS<sub>2</sub> based nanomaterials for room - temperature gas sensors. *Advanced Materials Technologies*, 5(5), 1901062.
- Late, D. J., Huang, Y. K., Liu, B., Acharya, J., Shirodkar, S. N., Luo, J., ... and Rao, C. N. R. (2013). Sensing behavior of atomically thin-layered MoS<sub>2</sub> transistors. *ACS nano*, 7(6), 4879-4891.
- Lee, C., Yan, H., Brus, L. E., Heinz, T. F., Hone, J., and Ryu, S. (2010). Anomalous lattice vibrations of single-and few-layer MoS<sub>2</sub>. *ACS nano*, 4(5), 2695-2700.
- Li, H., Yin, Z., He, Q., Li, H., Huang, X., Lu, G., ... and Zhang, H. (2012). Fabrication of single-and multilayer MoS<sub>2</sub> film-based field-effect transistors for sensing NO at room temperature. *Small*, 8(1), 63-67.
- Lopez-Sanchez, O., Lembke, D., Kayci, M., Radenovic, A., and Kis, A. (2013). Ultrasensitive photodetectors based on monolayer MoS<sub>2</sub>. *Nature Nanotechnology*, 8(7), 497–501.
- Lui, C. H., Frenzel, A. J., Pilon, D. V., Lee, Y. H., Ling, X., Akselrod, G. M., ... and Gedik, N. (2014). Trion-induced negative photoconductivity in monolayer MoS<sub>2</sub>. *Physical review letters*, 113(16), 166801.
- Liu, K., Feng, J., Kis, A., and Radenovic, A. (2014). Atomically thin molybdenum disulfide nanopores with high sensitivity for DNA translocation. *ACS nano*, 8(3), 2504-2511.
- Mak, K. F., Lee, C., Hone, J., Shan, J., and Heinz, T. F. (2010). Atomically thin MoS<sub>2</sub>: a new direct-gap semiconductor. *Physical review letters*, 105(13), 136805.

- Malic, E., Selig, M., Feierabend, M., Brem, S., Christiansen, D., Wendler, F., ... and Berghäuser, G. (2018). Dark excitons in transition metal dichalcogenides. *Physical Review Materials*, 2(1), 014002.
- Mak, K. F., He, K., Lee, C., Lee, G. H., Hone, J., Heinz, T. F., and Shan, J. (2010). Atomically Thin MoS<sub>2</sub>: A New Direct-Gap Semiconductor. *Physical review Letter*, 105(13), 136805.
- Mak, K. F., He, K., Lee, C., Lee, G. H., Hone, J., Heinz, T. F., and Shan, J. (2013). Tightly bound trions in monolayer MoS<sub>2</sub>. *Nature materials*, 12(3), 207-211.
- Molina-Sanchez, A., and Wirtz, L. (2011). Phonons in single-layer and few-layer MoS<sub>2</sub> and WS<sub>2</sub>. *Physical Review B*, 84(15), 155413.
- Mouri, S., Miyauchi, Y., and Matsuda, K. (2013). Tunable photoluminescence of monolayer MoS<sub>2</sub> via chemical doping. *Nano Letters*, 13(12), 5944–5948.
- Najmaei, S., Liu, Z., Zhou, W., Zou, X., Shi, G., Lei, S., ...and Lou, J. (2013). Vapour phase growth and grain boundary structure of molybdenum disulphide atomic layers. *Nature materials*, 12(8), 754-759.
- Nan, H., Wang, Z., Wang, W., Liang, Z., Lu, Y., Chen, Q., ... and Ni, Z. (2014). Strong photoluminescence enhancement of MoS<sub>2</sub> through defect engineering and oxygen bonding. *ACS nano*, 8(6), 5738-5745.
- Oh, H. M., Han, G. H., Kim, H., Bae, J. J., Jeong, M. S., and Lee, Y. H. (2016). Photochemical Reaction in Monolayer MoS<sub>2</sub> via Correlated photoluminescence, Raman spectroscopy, and atomic force microscopy. *ACS Nano*, 10(5), 5230–5236.
- Parkin, W. M., Balan, A., Liang, L., Das, P. M., Lamparski, M., Naylor, C. H., ... and Meunier, V. (2016). Raman shifts in electron-irradiated monolayer MoS<sub>2</sub>. *ACS Nano*, 10, 4134-4142.
- Radisavljevic, B., Radenovic, A., Brivio, J., Giacometti, V., and Kis, A. (2011). Single-layer MoS<sub>2</sub> transistors. *Nature nanotechnology*, 6(3), 147-150.
- Robert, C., Amand, T., Cadiz, F., Lagarde, D., Courtade, E., Manca, M., ... and Marie, X. (2017). Fine structure and lifetime of dark excitons in transition metal dichalcogenide monolayers. *Physical review B*, 96(15), 155423.

- Schedin, F., Geim, A. K., Morozov, S. V., Hill, E. W., Blake, P., Katsnelson, M. I., and Novoselov, K. S. (2007). Detection of individual gas molecules adsorbed on graphene. *Nature materials*, 6(9), 652-655.
- Splendiani, A., Sun, L., Zhang, Y., Li, T., Kim, J., Chim, C. Y., ... and Wang, F. (2010). Emerging photoluminescence in monolayer MoS<sub>2</sub>. *Nano letters*, 10(4), 1271-1275.
- Tongay, S., Suh, J., Ataca, C., Fan, W., Luce, A., Kang, J. S., ... and Wu, J. (2013). Defects activated photoluminescence in two-dimensional semiconductors: interplay between bound, charged and free excitons. *Scientific reports*, 3(1), 2657.
- Yagodkin, D., Greben, K., Eljarrat, A., Kovalchuk, S., Ghorbani-Asl, M., Jain, M., ... and Bolotin, K. I. (2022). Extrinsic localized excitons in patterned 2D semiconductors. *Advanced Functional Materials*, 32(31), 2203060.
- Yin, Z., Li, H., Li, H., Jiang, L., Shi, Y., Sun, Y., ... and Zhang, H. (2012). Single-layer MoS<sub>2</sub> phototransistors. *ACS nano*, 6(1), 74-80.
- Zheng, X., and Zhang, X. (2020). Excitons in Two-Dimensional Materials. In Thirumalain, J., and Pokutnyi, S.P. (Eds.). *Advances in Condensed-Matter and Materials Physics - Rudimentary Research to Topical Technology* (pp. 1-29). doi: 10.5772/intechopen.85564.