Band Modulation Appearance on TMDC Lateral Heterojunctions

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Transition metal dichalcogenides (TMDCs) have been attracting considerable attention because of their desirable physical properties for semiconductor devices, and lateral heterostructures is expected to contribute to making 2D electronic devices. However, detailed electronic structures on the junction have been not observed. Here, we study varieties of lateral heterojunction using scanning tunneling microscopy and spectroscopy. We find MoS_2/WS_2 heterojunction has larger band offset for conduction band minimum than that of isolated monolayers and type II to type I band alignment tranfomation[1)]. Further details will be discussed in the presentation.

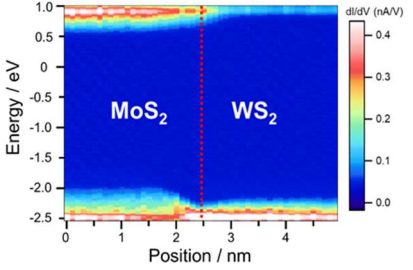

Figure: The dI/dV spectra around heterojunction

References:

1) Mak, K. F. *et al*. *Phys. Rev. Lett.* **105**, 136805 (2010).