

Investigating atomic layer structure in Transition Metal Halide / Multilayer Graphene systems

Stephen Tipper

Roman Gorbachev

University of Manchester, Oxford Road, Manchester, United Kingdom

stephen.tipper@postgrad.manchester.ac.uk

2D layered transition metal halides have been shown to exhibit unique electronic and magnetic properties[1,2]. When stacked into heterostructures with graphene, these properties can cause strong interactions that lead to interesting phenomena[3]. We investigate these systems with transmission electron microscopy to gain an understanding of the atomic structure of these systems, and attempt to correlate this with other observed phenomena.

References

- [1] Huang, B., Clark, G., Klein, D.R. *et al.* Electrical control of 2D magnetism in bilayer CrI₃. *Nature Nanotech* **13**, 544–548 (2018)
- [2] Yunfan Liang *et al.*, Polaron formation by electron polarization in two-dimensional transition metal halides, *J. Phys.: Condens. Matter* **37** 145601 (2025)
- [3] Daniel J. Rizzo, D. N. Basov *et al.* Charge-Transfer Plasmon Polaritons at Graphene/ α -RuCl₃ Interfaces, *Nano Letters* **2020** 20 (12), 8438-8445