Extension of Liquid-Exfoliation to novel 2D materials: Black Phosphorus nanosheets

Damien Hanlon*, C. Backes, A. Harvey, C. Boland, K. Lee, G. Duesberg, J. N. Coleman
School of Physics and CRANN, Trinity College Dublin, Dublin 2, Ireland

Liquid Phase exfoliation process

Control of exfoliation
Optical analysis
Size selection
Applications

Nanosheet Characterisation [1,3,4]
- Basic characterisation of black phosphorus (BP) nanosheets.
- Nanosheet size selection and optical metrics [1,4,5]

Nanosheet stability [4]
- Investigation of the stability of BP nanosheets in varying systems.

Gas Sensing and reinforcement [4]

Road Map for Liquid-Exfoliation
- Expansion of exfoliation to new materials, GaS [1] and Ni(OH)\textsubscript{2}.
- Development of optical metrics for size determination[2,3]
- Enrichment of mono- and bi-layer species by improved size selection. [3]