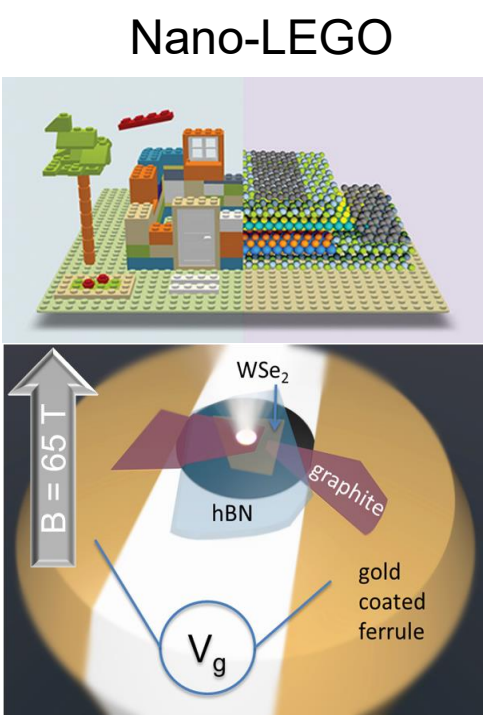
Technische Universität München | Arcisstraße 21 | 80333 München

Masters Thesis (WS2022 – Finley Lab)

Spectroscopy on atomically thin materials in high pulsed magnetic fields

The field of van der Waals heterostructures, which are stacks on individual atomically thin crystal sheets, has exploded in the last decade. Comparable to a game of Nano-Lego, those van der Waals stacks can be assembled in such a way that yield electro-optical nano-devices with essentially unlimited functionalities. Further, clever stacking can also result in new, fundamental physics.



The principal goal of this Masters thesis is to study the optical properties of actively tunable van der Waals heterostructures to examine topics such as exciton localization, manybody physics, exciton-exciton interactions or the impact of complex dielectric environments on exciton properties in high to ultrahigh magnetic fields.

During the project you will work in close collaboration with a small team of Ph.D. students and postdocs, therefore individual effort is key to drive this Masters project.

Some knowledge in the areas of van der Waals stacking, optics or cleanroom fabrication will be beneficial, but secondary to your personal motivation and commitment to this project.

You should:

(1) Be highly motivated and self-driven, (2) be practically minded with a get-things-done attitude, (3) enjoy working across a wide range of tasks (processing, optics) and (4) be willing to work in a very small team on challenging things very long hours …

You will get:

(1) the chance to work on current hot-topic issues in the area of 2D van der Waals physics (2) exposure to experiments in large scale magnetic field facilities (3) a sound understanding of the physics in atomically thin materials and hopefully (4) a few nice papers.

Interested? Please email finley@wsi.tum.de and Andreas.Stier@wsi.tum.de

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