TECHNISCHE UNIVERSITÄT WIEN

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Institute of Solid State Physics

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# EINLADUNG zum IFP-SEMINAR

## New Frontiers in Nanoscale Magnetism: Towards Three Dimensional Materials and Devices

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Institute of Applied Physics, TU Wien

Host: Karsten Held

Termin: Mittwoch, 10. Jänner 2024, 16:00 Uhr

Ort: TU Wien, Freihausgebäude
Wiedner Hauptstraße 8-10, 1040 Wien
Seminarraum DC rot 07 (roter Bereich, 7. OG)

*Vor dem Vortrag gibt es ab 15:30 Kaffee und Kekse*

Abstract:

The expansion of nanomagnetism to three dimensions provides exciting opportunities to explore new physical phenomena and opens great prospects to create 3D magnetic devices for green computing technologies [1].

In this talk, I will present some of our recent works dedicated to the investigation of three dimensional artificial magnetic materials, including multilayered and complex-shaped geometries. The talk will give an overview of the new methods we have developed to fabricate [2,3] and characterize [4,5] these nanomaterials, and some of the new functionalities obtained. This includes the creation of localized spin textures, topological defects and stray fields, exploiting a combination of geometrical effects and inter-element interactions [6, 7], the automotive 3D motion of domain walls [8], the unconventional angular dependence of magnetotransport effects in 3D circuits [9], and the generation of chiral spin interactions across interlayers via interfacial effects in synthetic antiferromagnetic multilayers [10].

Acknowledgements

I would like to thank all my group members and collaborators contributing to the work I will be presenting. This work is supported by the European Community under the Horizon 2020 Program, Contract No. 101001290 (3DNANOMAG).

References

[1] A. Fernández-Pacheco et al, Nature Comm. 8, 1 (2017).
[2] L. Skoric et al, Nano Letters 20, 184 (2020).
[3] D. Sanz-Hernández et al, Nanomaterials 8, 483 (2018).
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[6] D. Sanz-Hernández et al, ACS Nano 14, 8084 (2020).

[7] C. Donnelly et al, Nature Nanotechnol. 17, 136 (2022).
[8] L. Skoric et al, ACS Nano 16, 8860 (2022).
[9] F. Meng et al, ACS Nano 15, 6765 (2021).
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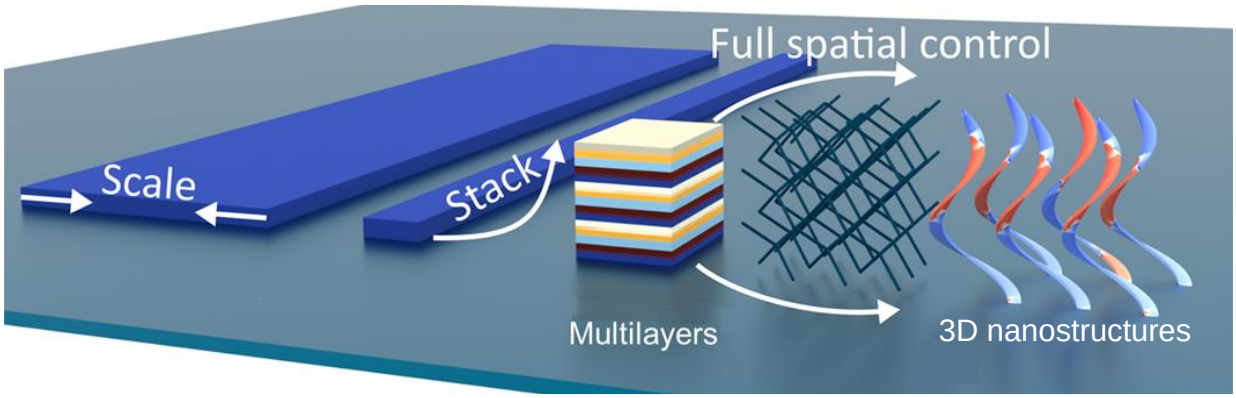


Figure: Towards 3D nanomagnetic materials and devices.

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