



# Ph.D. position in Atomic Layer Deposition

– Extension of application deadline –

Atomic layer deposition (ALD) is an advanced coating technology for materials and film deposition.<sup>[1]</sup> Due to its unique deposition properties, such as uniformity and three-dimensional conformality, ALD has been widely used in semiconductor production processes.<sup>[2]</sup> However, it is crucial to carefully select precursors and reactants to achieve controllable and uniform deposition of high-purity functional films.<sup>[3,4]</sup>

Now, we are currently looking for a **Ph.D. candidate** who is interested in research on ALD of magnetic thin film heterostructures. The position will be based in **Prof. Stuart Parkin's Department "Nanosystems from Ions, Spins, and Electrons" (NISE)** at the **Max Planck Institute of Microstructure Physics, Halle (Saale), Germany** that has major research programs in spintronics, atomically engineered and topological magnetic materials.

## YOUR TASKS

The candidate will learn to perform the following tasks:

- Develop and optimize ALD recipes to deposit functional thin films using cutting-edge integrated systems;
- Investigate related deposition mechanisms by in-situ analysis tools;
- Design, fabrication, and performance measurements of devices in collaboration with other colleagues.

## YOUR PROFILE

The candidate is expected to develop in-depth knowledge about the ALD deposition process and get insight into the deposition mechanism by using in-situ measurements, as well as to apply this knowledge to the successful development and measurement of innovative, high-performant devices. The candidate should be highly creative, proactive, self-motivated, and capable of independent work beyond state-of-the-art objectives. Active participation and engagement in the research activities of the group are highly desirable.

We seek candidates with:

- A background in Physics, Materials Science, Chemistry or Engineering; knowledge of gas-phase thin-film growth techniques is preferable;
- Knowledge of thin-film characterization and measurement is desirable;
- Experience with monitoring and analyzing the deposition process with in-situ analysis tools is beneficial.

## WE OFFER

- Access to state-of-the-art facilities for materials growth, device preparation, and assessment;
- An open and engaging working environment addressing some of the most impactful problems in the field with the freedom to contribute your ideas to solve high-impact problems;
- Schedule flexibility;
- Remuneration amounting to 65% EG13 TVöD-Bund.
- Alternatively, self-funded applicants (e.g. scholarship) can also be admitted.
- All necessary training will be carried out after admission. The starting date is flexible.

## YOUR APPLICATION

- For applications and any other questions, please email [michael.strauch@mpi-halle.mpg.de](mailto:michael.strauch@mpi-halle.mpg.de) with reference to job code **ALD-PhD-2023** including CV, motivation letter and two academic reference letters **until March 31, 2023**.
- The Max Planck Institute of Microstructure Physics gives priority to applications from severely disabled candidates with equivalent qualifications. Furthermore, we strive to increase the proportion of female employees and therefore specifically encourage women to apply. For more information, please visit [www.mpi-halle.mpg.de/nise](http://www.mpi-halle.mpg.de/nise)

## References

- [1] Rong Chen et al 2020 Int. J. Extrem. Manuf. 2 022002
- [2] V. Cremers, R. L. Puurunen, J. Dendooven, Appl. Phys. Rev. 2019, 6, 021302.
- [3] H. Zhang,... S. Parkin, R. B. Wehrspohn, Angew. Chemie - Int. Ed. 2020, 59, 17172.
- [4] Parkin, S. S. P., Hayashi, M. & Thomas, L., Science 320, 190–194 (2008).