Assistant Professor Dr. Anastasios Markou
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Place, date of birth: Athens, 6th September 1985. Nationality: Greek, 2015: Mandatory Military Service

PROFESSIONAL APPOINTMENTS

2023 February – present: **Assistant professor** at Physics Department of University of Ioannina, Greece. *Electronic and magnetic properties of materials*.
2021 January – **2023** January (2 years): **Research engineer (permanent) – Group Leader** at Quantum Materials Thin Films Group | Max Planck Institute for Chemical Physics of Solids.
2017 January – **2020** December (4 years): **Postdoctoral research fellow– Group Leader** at Quantum Materials Thin Films Group | Max Planck Institute for Chemical Physics of Solids. *Advisor*: Prof. Claudia Felser.
2016 January – **2016** December (1 year): **Postdoctoral researcher** at Max Planck Institute for Chemical Physics of Solids, Dresden (Germany). *Advisor*: Prof. Claudia Felser.

EDUCATION

2014: **Ph.D.** from Department of Materials Science and Engineering, University of Ioannina, Greece, Dissertation: Nonostructured high magnetic anisotropy Pt-TM (TM= Co, Fe, Cr) films.
2010: **Master** in **Materials Chemistry and Technology**, Department of Chemistry and Department of Materials Science and Engineering, University of Ioannina, Greece. Master's thesis: Transformation from the cubic A1 to the tetragonal $L1_0$ structure in Co-Pt layers.
2008: **Diploma** from the **Department of Materials Science and Engineering**, University of Ioannina, Greece, Diploma thesis: Magnetic properties of Co films and Co/Pt multilayers on nanostructured PDMS templates.

PROFESSIONAL ACTIVITIES

Scientific Focus: Design, growth, and physical characterization of new quantum magnetic materials for energy conversion, spintronics and data storage; Thin films, epitaxial thin films, heterostructures and nanostructured materials; Quantum materials: Heusler compounds, magnetic Weyl semimetals, stabilization of anti(skyrmions), noncollinear magnets and antiferromagnets; Emergent phenomena in topological materials and ferromagnets revealed in transport; Magnetotransport effects.

Teaching activities:

- **Undergraduate courses:** Materials Science (2023 – present), Laboratory Courses in Modern Physics (2023 – present), Thermodynamics and Laboratories in Heat (2023 – present) at the Physics Department of the University of Ioannina. In addition, the undergraduate course Physics - electromagnetism (2023 – today) at the Chemistry Department, University of Ioannina.
- **Postgraduate courses:** Materials Science (2024 – present) at the Physics Department, University of Ioannina, Lectures on the course Structure of Materials - Physics and Chemistry of Solid State (2024) Interdepartmental Postgraduate Programme in Materials Chemistry and Technology (Department of Materials Science and Engineering, University of Ioannina).

Research and Mentoring highlights:

- **Publications:** > 62 peer-reviewed publications (*h*-index: 19, citations: 1269, Google Scholar October 2024).
- **Conferences, Workshops:** > 23 presentations with >8 invited oral presentations.
- **Research grants:** Participation in funded research projects: >8; 4 EU–funded, 4-German funded. In the Germans projects: I was the writer of the proposals and co-applicant in 2 of them (DPG-Skyrmionics; Total (€ 362,200)), and PI in a SAB project (€ 208,295).
- **Mentoring:** As a Group Leader at Max Planck, I co-supervised with Prof. C. Felser 7 Postdocs and 4 Ph.D. students. As an Assistant Professor at the Physics Department 1 diploma thesis and 1 ongoing.
- **Memberships:** Member of the Deutsche Physikalische Gesellschaft (German Physical Society).
- **Reviewing activities:** Reviewer in various journals including the Physical Review: **Physical Review Letters**, Physical Review X, P Physical Review B, Physical Review Research, and Physical Review Materials (APS), **Applied Physics Letters**, Applied Physics Letters Materials, and Journal of Applied Physics (AIP), **Scientific Reports and Communications Materials (Nature Portfolio)**, Advanced Electronic Materials (ACS), **Advanced Materials**, Advanced Materials Interfaces, Advanced Electronic Materials, Advanced Science (Wiley-VCH), Journal

of Magnetism and Magnetic Materials, Physica B (ELSEVIER), Metals, Nanomaterials, Materials, Crystals (MDPI), international conferences (IEEE).

KEY PUBLICATIONS

- Cubic Mn_3Ge thin films stabilized through epitaxial growth as a candidate noncollinear antiferromagnet. **A. Markou**[*], J. M. Taylor, J. Gayles, Y. Sun, C. Felser, D. Kriegner, J. Grenzer, S. Guo, W. Schnelle, E. Lesne, C. Felser, S. S. P. Parkin, *Appl. Phys. Lett.* **125**, 022402 (2024). DOI: 10.1063/5.0206194.
- Noncollinear magnetic order in epitaxial thin films of the centrosymmetric MnPtGa hard magnet. R. Ibarra, E. Lesne, B. Ouladdiaf, K. Beauvois, A. S. Sukhanov, R. Wawrzyńczak, W. Schnelle, A. Devishvili, D. S. Inosov, C. Felser, **A. Markou**[*], *Appl. Phys. Lett.* **120**, 172403 (2022). DOI: 10.1063/5.0090009.
- Hard magnet topological semimetals in XPt_3 compounds with the harmony of Berry curvature. **A. Markou**[*], J. Gayles, E. Derunova, P. Swekis, J. Noky, L. Zhang, M. N. Ali, Y. Sun, C. Felser, *Commun. Phys.* **4**, 104 (2021). DOI: 10.1038/s42005-021-00608-1 (**Nature Portfolio**).
- Anomalous and topological Hall effects in epitaxial thin films of the noncollinear antiferromagnet Mn_3Sn. J. M. Taylor, **A. Markou**, E. Lesne, P. K. Sivakumar, C. Luo, F. Radu, P. Werner, C. Felser, S. S. P. Parkin, Phys. Rev. B. 101, 094404 (2020). DOI: 10.1103/PhysRevB.101.094404.
- Imaging and writing magnetic domains in the non-collinear antiferromagnet Mn_3Sn. H. Reichlova, T. Janda, J. Godinho, **A. Markou**, D. Kriegner, R. Schlitz, J. Zelezny, Z. Soban, M. Bejarano, H. Schultheiss, P. Nemec, T. Jungwirth, C. Felser, J. Wunderlich, S. T. B. Goennenwein, *Nat. Commun.* **10**, 5459 (2019). DOI: 10.1038/s41467-019-13391-z (**Nature Portfolio**).
- Thickness dependence of the anomalous Hall effect in thin films of the topological semimetal Co_2MnGa. **A. Markou**[*], D. Kriegner, J. Gayles, L. Zhang, Y. C. Chen, B. Ernst, Y. H. Lai, W. Schnelle, Y. H. Chu, Y. Sun, C. Felser, *Phys. Rev. B* **100**, 54422 (2019). DOI: 10.1103/PhysRevB.100.054422.
- Topological Hall effect in thin films of $Mn_{1.5}PtSn$, P. Swekis, **A. Markou**[*], D. Kriegner, J. Gayles, R. Schlitz, W. Schnelle, S. T. B. Goennenwein, C. Felser, *Phys. Rev. Materials* **3**, 013001 (R) (2019). DOI: 10.1103/PhysRevMaterials.3.013001, **Rapid communication**.