

Curriculum Vitae

Dr. Anastasios Markou

Contact Information

Assistant Professor Dr. Anastasios Markou

Department of Physics

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Date of birth: 06/09/1985

Place of birth: Athens/Greece

Marital status: Married with two kids

Mandatory military service: January 2015 – October 2015

Work Experience

2/2023 - present	Assistant Professor Department of Physics, University of Ioannina.
1/2021 – 1/2023	Research scientist (permanent) and Group Leader in the Quantum Materials thin Films Group Max Planck Institute for Chemical Physics of Solids.
1/2016 – 12/2020	Postdoctoral research scientist and Group Leader in the Quantum Materials thin Films Group Max Planck Institute for Chemical Physics of Solids.
4/2013	Visiting research assistant Max Planck Institute for Chemical Physics of Solids, internship.
9/2012 – 8/2013	Research assistant Institute of Nanoscience and Nanotechnology, N.C.S.R Demokritos.
10/2013– 8/2014	

Education

2014	Ph.D Department of Materials Science and Engineering, University of Ioannina. Dissertation title: “Nanostructured High Magnetic Anisotropy Pt-TM (TM = Co, Fe, Cr) Films”.
2010	Master’s degree Cross-Departmental Master Course Program: “Materials Chemistry and Technology”, Departments of Chemistry, and Materials Science and Engineering, University of Ioannina.
2008	Diploma Department of Materials Science and Engineering, University of Ioannina.

Research Interests and Activities

- Design, growth, and physical characterization of new quantum magnetic materials for spintronics, data storage and energy conversion.
- Quantum materials: Heusler compounds, magnetic Weyl semimetals, stabilization of (anti)skyrmions in magnetic materials, noncollinear magnets and antiferromagnets.
- Thin films, epitaxial thin films and heterostructures.

Awards

- *Best on-going Project*, Industrial and Materials Technologies in the FP7, Project Rare-Earth Free Permanent Magnets (REFREEPERMAG, www.refreepermag-eu.eu), coordinated by Dr. Dimitrios Niarchos (Member of his Research Team), 2014.
- *Best poster award for the work on Magnetic annealing of CoPt films and Co/Pt bilayers*, XXVI PanHellenic Conference on Solid State Physics and Materials Science, Ioannina, Greece, September 26 - 29, 2010.

Funded Research Projects

1. **Topologische Spintronik: CMOS -kompatible Materialien aus der B20 -Familie (Top20)**, Sächsische AufbauBank (SAB) No. 100611609 (4.2022-12.2022). Budget: 208.295 €. Principal Investigator.
2. **Mesoscopic topological spin textures, spin and topological Hall effect in magnetic thin films and heterostructures**, Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) under SPP 2137 - Skyrmionics (2021-2024). Budget: 209.800 €. Writer of the proposal and Co-applicant.
3. **Heusler compounds for skyrmionics**, Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) under SPP 2137 - Skyrmionics No 403502666 (2018-2020). Budget: 152.400 €. Writer of the proposal and co-applicant.

Participation in Research Projects

1. **Skyrmion-Topological insulator and Weyl semimetal technology (SKYTOP)**, EU-funded Horizon 2020 project in FETPROACT No. 824123 (2018-2023). Co-investigator and in charge of yearly reports and attending management meetings. Coordinator A. Dimoulas.
2. **Topological and correlated electronics at surfaces and interfaces (ToCoTronics)**, German Research Foundation (Leibniz Program, Sonderforschungsbereich 1170; Würzburg-Dresden Cluster of Excellence on Complexity and Topology in Quantum Matter, ct.qmat, EXC 2147, project 39085490).
3. **Antiferromagnetic spintronics (ASPIN)**, Project no. 766566, European Commission FET Open RIA (2017-2022). Co-investigator and in charge of yearly reports and attending management meetings. Coordinator T. Jungwirth.
4. **Topological Materials: New Fermions, Realization of Single Crystals and their Physical Properties (TOPMAT)**, ERC Advanced Grant No. 742068, (2017-2022). Coordinator C. Felser.
5. **Heusler Thin Films for STT-RAM**, Intel Corporation (Intel) and Department of Solid State Chemistry, MPI CPFS (2016-2019).
6. **New magnetic materials without rare earths**, Max Planck Cooperation - Fraunhofer-Gesellschaft (2014-2017). Coordinator C. Felser.
7. **Rare-Earth Free Permanent Magnets (REFREEPERMAG)**, Project no. 280670, FP7-NMP, (2012-2015). Coordinator D. Niarchos.

Teaching Experience

1. **Assistant Professor** at the Physics Department, University of Ioannina since 2023
 - Materials Science – 6th and 8th Semesters
 - Laboratory Courses in Modern Physics – 7th and 8th Semesters
 - Thermodynamics and Laboratories in Heat – 4th Semester
 - Physics (Department of Chemistry) -1st Semester
2. **Assistant laboratory instructor** | as a Ph.D. candidate Department of Materials Science and Engineering, University of Ioannina.
 - Materials Lab III (Electrical, optical and magnetic properties of materials). 7th semester for the academic years 2009-2014.

Mentoring

As an Assistant Professor at the Department of Physics of University of Ioannina

- **Undergraduate Students:** 2 ongoing diploma theses.

As a Group Leader at MPI-CPfS Max Planck Institute for Chemical Physics of Solids

- **Postdoctoral research scientists** | Roshnee Sahoo (2016-2017), Dominik Kriegner (2017-2018), Liguozhang (2017 - 2021), Haicheng Lin (2018 - 2021), Hua Lv (2019 – 2021).
- **Ph.D students** | Adel Kalache (2016-2019), Benedikt Ernst (2016-2020), James M. Taylor [(2016-2020), in a collaboration with Prof. S. S. P. Parkin from MPI Microstructure, Halle, Germany], Peter Swekis (2017 – 2021), Rebeca Ibarra (2019 – 2023).
- **Visiting Ph.D students** | Yi – Cheng Chen (2017-2018) (MPI-CPfS, in collaboration with Prof. Dr. Y. H. Chu from Department of Materials Science and Engineering, National Chiao Tung University, Taiwan).

Administrative Responsibilities

- Member of the Department's Assembly, Committee of Buildings and Safety, Committee of Seminars, Committee of Practical Training at the Physics Department of University of Ioannina.
- Member of the Group Leaders Assembly at the Department of Topological Quantum Chemistry at the Max Planck Institute for Chemical Physics of Solids (2017-2023).

Publications in Refereed Journals

1. S. A. Ryan, P. C. Johnsen, M. F. Elhanoty, A. Grafov, N. Li, A. Delin, A. Markou, E. Lesne, C. Felser, O. Eriksson, H. C. Kapteyn, O. Grånäs², M. M. Murnane, Optically controlling the competition between spin-flips and intersite spin transfer in a Heusler half-metal on sub-100 fs timescales. Accepted in *Science Advances*.
2. D. Hamara, G. F. Lange, F. N. Kholid, A. Markou, C. Felser, R.-J. Slagter, C. Ciccarelli, Ultrafast helicity-dependent photocurrents in Weyl Magnet Mn₃Sn. *Commun. Phys.* **6**, 320 (2023).
3. H. Lv, E. Lesne, R. Ibarra, Y. Sun, A. Markou^{*}, C. Felser, Realization of chiral multifold semimetal RhSi crystalline thin films. *Phys. Rev. Materials* **7**, 054201 (2023).
4. G. Li, Q. Yang, K. Manna, Y. Zhang, P. Merz, C. Shekhar, Y. Zhang, H. Lv, A. Markou, Y. Sun, C. Felser, Observation of asymmetric oxidation catalysis with B20 chiral crystals. *Angew. Chem. Int. Ed.* **62**, e2023032 (2023).

* The symbol * indicates that I am the corresponding author and responsible for the communication with the Editor.

5. L. Tomarchio, S. Mou, L. Mosesso, A. Markou, E. Lesne, C. Felser, S. Lupi, THz generation from the topological nodal line semimetal Co_2MnGa . *ACS Appl. Electron. Mater.* **5**, 1437 (2023).
6. J. Kim, K. M. Fijalkowski, J. Kleinlein, C. Schumacher, A. Markou, C. Gould, S. Schreyeck, C. Felser, L. W. Molenkamp, Molecular beam epitaxy of a half-Heusler topological superconductor candidate YPtBi . *Phys. Rev. Materials* **7**, 024802 (2023).
7. E. Georgopoulou-Kotsaki, P. Pappas, A. Lintzeris, P. Tsipas, S. Fragos, A. Markou, C. Felser, E. Longo, R. Mantovan, F. Mahfouzi, N. Kioussis, A. Dimoulas, Significant enhancement of ferromagnetism above room temperature in epitaxial 2D van der Waals ferromagnet $\text{Fe}_{5-\delta}\text{GeTe}_2/\text{Bi}_2\text{Te}_3$ heterostructures. *Nanoscale* **15**, 2223 (2023).
8. R. Ibarra, E. Lesne, B. Sabir, J. Gayles, C. Felser, A. Markou^{*}, Anomalous Hall effect in epitaxial thin films of the hexagonal Heusler MnPtGa noncollinear hard magnet. *Adv. Mater. Inter.* **9**, 220562 (2022).
9. P. Ziogas, A. B. Bourlinos, P. Chatzopoulou, G. P. Dimirakopoulos, T. Kehagias, A. Markou, A. P. Douvalis, Intriguing prospects of a novel magnetic nanohybrid material: ferromagnetic Fe-Rh nanoparticles grown on nanodiamonds. *Metals* **12**, 1355 (2022).
10. X. Han, A. Markou, J. Stensberg, Y. Sun, C. Felser, L. Wu, Giant room-temperature anomalous terahertz Faraday rotation in the magnetic Weyl semimetal Co_2MnGa . *Phys. Rev. B* **105**, 174406 (2022).
11. R. Ibarra, E. Lesne, B. Ouladdiaf, K. Beauvois, A. S. Sukhanov, R. Wawrzyńczak, W. Schnelle, A. Devishvili, D. S. Inosov, C. Felser, A. Markou^{*}, Noncollinear magnetic order in epitaxial thin films of the centrosymmetric MnPtGa hard magnet. *Appl. Phys. Lett.* **120**, 172403 (2022).
12. J. Hawecker, E. Rongione, A. Markou, S. Krishnia, F. Godel, S. Collin, R. Lebrun, J. Tignon, J. Mangeney, T. Boulier, J.-M. George, C. Felser, H. Jaffrès, S. Dhillon, Spintronic THz emitters based on transition metals and semi-metals/Pt multilayers. *Appl. Phys. Lett.* **120**, 122406 (2022).
13. G. Bierhance, A. Markou, O. Gueckstock, R. Rouzegar, Y. Behovits, A. Chekhov, M. Wolf, T. S. Seifert, C. Felser, T. Kampfrath, Spin-voltage-driven efficient terahertz spin currents from the magnetic Weyl semimetals Co_2MnGa and Co_2MnAl . *Appl. Phys. Lett.* **120**, 082401 (2022).
14. S. Galeski, T. Ehmcke, R. Wawrzyńczak, P. M. Lozano, K. Cho, A. Sharma, S. Das, F. Küster, P. Sessi, M. Brando, R. Kuchler, A. Markou, M. König, P. Swekis, C. Felser, Y. Sassa, Q. Li, G. Gu, M. V. Zimmermann, O. Ivashko, D. I. Gorbunov, S. Zherlitsyn, T. Förster, S. S. P. Parkin, J. Wosnitzer, T. Meng, J. Gooth, Origin of the quasi-quantized Hall effect in ZrTe_5 . *Nat. Commun.* **12**, 3197 (2021).
15. A. Markou^{*}, J. Gayles, E. Derunova, P. Swekis, J. Noky, L. Zhang, M. N. Ali, Y. Sun, C. Felser, Hard magnet topological semimetals in XPt_3 compounds with the harmony of Berry curvature. *Commun. Phys.* **4**, 104 (2021).
16. L. Zhang, T. Helm, H. Lin, F. Fan, C. Le, Y. Sun, A. Markou, C. Felser, Quantum oscillations in ferromagnetic $(\text{Sb}, \text{V})_2\text{Te}_3$ topological insulator thin films. *Adv. Mater.* **33**, 2102107 (2021).
17. P. Ritzinger, H. Reichlova, D. Kriegner, A. Markou, R. Schlitz, M. Lammel, D. Scheffler, G. H. Park, A. Thomas, P. Streda, C. Felser, S. T. B. Goennenwein, K. Vyborny, Anisotropic magnetothermal transport in Co_2MnGa thin films. *Phys. Rev. B.* **104**, 094406 (2021).
18. A. K. Sharma, J. Jena, K. G. Rana, A. Markou, H. L. Meyerheim, K. Mohseni, A. K. Srivastava, I. Kostanoskiy, C. Felser, S. S. P. Parkin, Nanoscale noncollinear spin textures in thin films of a D_{2d} Heusler compound. *Adv. Mater.* **33**, 2101323 (2021).
19. A. Mourkas, A. Markou, P. Swekis, I. Panagiotopoulos, Topological Hall effect in Pt/Co/W multilayers samples with different anisotropies. *J. Magn. Magn. Mater.* **500**, 167937 (2021).

20. P. Swekis, A. Markou, J. Sichelschmidt, C. Felser, S. Goennenwein, Magnetocrystalline anisotropies in Mn_xPtSn thin films. *APL Mater.* **9**, 051104 (2021).
21. P. Swekis, J. Gayles, D. Kriegner, G. H. Fecher, Y. Sun, S. T. B. Goennenwein, C. Felser, A. Markou, Role of magnetic exchange interactions in chiral-type Hall effects of epitaxial Mn_xPtSn films. *ACS Appl. Electron. Mater.* **3**, 1323 (2021).
22. P. Swekis, A. Sukhanov, Y.-C. Chen, A. Gloskovskii, G. H. Fecher, I. Panagiotopoulos, J. Sichelschmidt, V. Ukleev, A. Devishvili, A. Vorobiev, D. Inosov, S. T. B. Goennenwein, C. Felser, A. Markou, Magnetic and electronic properties of Weyl semimetal Co_2MnGa thin films. *Nanomaterials* **11**, 251 (2021).
23. S. Galeski, X. Zhao, R. Wawrzyńczak, T. Meng, T. Förster, P. M. Lozano, S. Honnali, N. Lamba, T. Ehmcke, A. Markou, Q. Li, G. Gu, W. Zhu, J. Wosnitza, C. Felser, G. F. Chen, J. Gooth, Unconventional Hall response in the quantum limit of $HfTe_5$. *Nat. Commun.* **11**, 5926 (2020).
24. P. K. Sivakumar, B. Göbel, E. Lesne, A. Markou, J. Gidugu, J. M. Taylor, H. Deniz, J. Jena, C. Felser, I. Mertig, S. S. P. Parkin, Topological Hall signatures of two chiral spin textures hosted in a single tetragonal inverse Heusler thin film. *ACS Nano* **14**, 13463 (2020).
25. J. M. Taylor, A. Markou, E. Lesne, P. K. Sivakumar, C. Luo, F. Radu, P. Werner, C. Felser, S. S. P. Parkin, Anomalous and topological Hall effects in epitaxial thin films of the noncollinear antiferromagnet Mn_3Sn . *Phys. Rev. B* **101**, 094404 (2020).
26. G. H. Park, H. Reichlova, R. Schlitz, M. Lammel, A. Markou, P. Swekis, P. Ritzinger, D. Kriegner, J. Noky, J. Gayles, Y. Sun, C. Felser, K. Nielsch, S. T. B. Goennenwein, A. Thomas, Thickness dependence of the anomalous Nernst effect and the Mott relation of Weyl-semimetal Co_2MnGa thin films. *Phys. Rev. B* **101**, 060406(R) (2020). **Rapid communication**
27. H. Reichlova, T. Janda, J. Godinho, A. Markou, D. Kriegner, R. Schlitz, J. Zelezny, Z. Soban, M. Bejarano, H. Schultheiss, P. Nemeč, T. Jungwirth, C. Felser, J. Wunderlich, S. T. B. Goennenwein, Imaging and writing magnetic domains in the non-collinear antiferromagnet Mn_3Sn . *Nat. Commun.* **10**, 5459 (2019).
28. Y.C. Chen, M.Yen, Y.H. Lai, A. Markou, L. Zhang, Y.Y. Chin, H. J. Lin, C. T. Chen, C. Felser, Y. H. Chu, Heteroepitaxy of Co-based Heusler compound/muscovite for flexible spintronics, *ACS Appl. Mater. Interfaces* **11**, 35162 (2019).
29. A. Markou, I. Panagiotopoulos, L. Stoleriu, A. Stancu, F. Ott, Coupling dependent reversal in Co/Pt based mixed anisotropy multilayer stacks. *J. Magn. Magn. Mater.* **485**, 205 (2019).
30. B. Ernst, R. Sahoo, Y. Sun, J. Nayak, L. MÜchler, A. K. Nayak, N. Kumar, J. Gayles, A. Markou, G. H. Fecher, C. Felser, Anomalous Hall effect and the role of Berry curvature in Co_2TiSn Heusler films. *Phys. Rev. B* **100**, 54445 (2019).
31. A. Markou, D. Kriegner, J. Gayles, C. Felser, L. Zhang, Y. C. Chen, B. Ernst, Y. H. Lai, W. Schnelle, Y. H. Chu, Y. Sun and C. Felser, Thickness dependence of the anomalous Hall effect in thin films of the topological semimetal Co_2MnGa . *Phys. Rev. B* **100**, 54422 (2019).
32. J. M Taylor, E. Lesne, A. Markou, F. K. Dejane, P. K. Sivakumar, S. Pöllath, K. G. Rana, N. Kumar, C. Luo, H. Ryll, F. Radu, F. Kronast, P. Werner, C. H. Back, C. Felser, S. S. P. Parkin, Magnetic and electrical transport signatures of uncompensated moments in epitaxial thin films of the noncollinear antiferromagnet Mn_3Ir . *Appl. Phys. Lett.* **115**, 062403 (2019).
33. J. M. Taylor, E. Lesne, A. Markou, F. K. Dejane, B. Ernst, A. Kalache, K. G. Rana, N. Kumar, P. Werner, C. Felser, S. S. P. Parkin, Epitaxial growth, structural characterization, and exchange bias of noncollinear antiferromagnetic Mn_3Ir thin films. *Phys. Rev. Mater.* **3**, 074409 (2019).

34. R. Schlitz, P. Swekis, A. Markou, H. Reichlova, M. Lammel, J. Gayles, A. Thomas, K. Nielsch, C. Felser, S. T. B. Goennenwein, All electrical access to topological transport features in $Mn_{1.8}PtSn$ films. *Nano Lett.* **19**, 2366 (2019).
35. P. Swekis, A. Markou, D. Kriegner, J. Gayles, R. Schlitz, W. Schnelle, S. T. B. Goennenwein, C. Felser, Topological Hall effect in thin films of $Mn_{1.5}PtSn$. *Phys. Rev. Materials* **3**, 013001 (R) (2019). **Rapid communication**
36. H. Reichlova, R. Schlitz, S. Beckert, P. Swekis, A. Markou, Y.-C. Chen, D. Kriegner, S. Fabretti, G. H. Park, A. Niemann, S. Sudheendra, A. Thomas, K. Nielsch, C. Felser, S. T. B. Goennenwein, Large anomalous Nernst effect in thin films of the Weyl semimetal Co_2MnGa . *Appl. Phys. Lett.* **113**, 212405 (2018)
37. J. Hu, B. Ernst, S. Tu, M. Kuveždić, A. Hamzić, E. Tafra, M. Basletić, Y. Zhang, A. Markou, C. Felser, A. Fert, W. Zhao, J.-P. Ansermet, H. Yu, Anomalous Hall and Nernst effects in Co_2TiSn and $Co_2Ti_{0.6}V_{0.4}Sn$ Heusler thin films. *Phys. Rev. Appl.* **10**, 044037 (2018).
38. A. Kalache, S. Selle, W. Schnelle, G. H. Fecher, T. Höche, C. Felser, A. Markou, Tunable magnetic properties in tetragonal Mn-Fe-Ga Heusler films with perpendicular anisotropy for spintronic applications. *Phys. Rev. Materials* **2**, 084407 (2018).
39. A. Markou, J. M. Taylor, A. Kalache, P. Werner, S. S. P. Parkin, C. Felser, Noncollinear antiferromagnetic Mn_3Sn films. *Phys. Rev. Materials* **2**, 051001(R) (2018).

Rapid Communication

40. A. Markou, A. Mourkas, I. Panagiotopoulos, L. Stoleriu, A. Stancu, Study of magnetization reversal in layered heterostructures by vector magnetometry. *J. Magn. Magn. Mater.* **445**, 95 (2018).
41. J. Karel, F. Casoli, L. Nasi, P. Lupo, R. Sahoo, B. Ernst, A. Markou, A. Kalache, R. Cabassi, F. Albertini, C. Felser, Enhanced magnetization and anisotropy in Mn-Ga thin films grown on LSAT. *Appl. Phys. Lett.* **111**, 182405 (2017).
42. A. Kalache, A. Markou, S. Selle, T. Höche, R. Sahoo, G. H. Fecher, C. Felser, Heteroepitaxial growth of tetragonal $Mn_{2.7-x}Fe_xGa_{1.3}$ ($0 \leq x \leq 1.2$) Heusler films with perpendicular magnetic anisotropy. *APL Mater.* **5**, 096102 (2017). **Editor's Picks**
43. V. D. Stavrou, L.N. Gergidis, A. Markou, A. Charalambopoulos, I. Panagiotopoulos, Micromagnetics of triangular thin films nanoelements. *J. Magn. Magn. Mater.* **401**, 716 (2016).
44. G. Giannopoulos L. Reichel, A. Markou, W. Wallisch, M. Stöger-Pollach, I. Panagiotopoulos, V. Psycharis, S. Fähler, J. Fidler, D Niarchos, Structural and magnetic properties of strongly carbon doped Fe-Co thin films. *J. Magn. Magn. Mater.* **393**, 479 (2015).
45. G. Giannopoulos, L. Rechel, A. Markou, I. Panagiotopoulos, V. Psycharis, C. Damm, S. Fähler, I. Khan, J. Hong, D. Niarchos, Optimization of $L1_0$ FePt/Fe₄₅Co₅₅ thin films for rare earth free permanent magnet applications. *J. Appl. Phys.* **117**, 223909 (2015).
46. G. Giannopoulos, R. Salikhov, B. Zingsem, A. Markou, I. Panagiotopoulos, V. Psycharis, M. Farle, D. Niarchos, Large magnetic anisotropy in strained Fe/Co multilayers on AuCu and the effect of carbon doping. *APL Mat.* **3**, 041103 (2015).
47. A. Malainou, K. Tsougrni, K. Ellinas, P.S. Petrou, V. Constantoudis, E. Sarantopoulou, K. Awsik, A. Bernasik, A. Budkowski, A. Markou, I. Panagiotopoulos, S.E. Kalabakos, E. Gogolides, A. Tserepi, Plasma-assisted nanoscale protein patterning on Si substrates via colloidal lithography. *J. Phys. Chem. A* **117**, 13743 (2013).
48. A. Markou, K. G. Beltsios, I. N. Gergidis, I. Panagiotopoulos, T. Bakas, K. Ellinas, A. Tserepi, L. Stoleriu, R. Tanasa, A. Stancu, Magnetization reversal in triangular $L1_0$ -FePt nanoislands. *J. Magn. Magn. Mater.* **344**, 224 (2013).
49. A. Markou, I. Panagiotopoulos, T. Bakas, P. Postolache, L. Stoleriu, A. Stancu, Magnetization reversal in graded anisotropy Co/Pt multilayers: A FORC study.

J. Appl. Phys. **112**, 123914 (2012).

50. A. Markou, I. Panagiotopoulos, T. Bakas, D. Niarchos, G. Safran, W. Li, G. C. Hadjipanayis, Formation of L1₀ with (001) texture in magnetically annealed Co/Pt multilayers. *J. Appl. Phys.* **110**, 083903 (2011).
51. A. Markou, I. Panagiotopoulos, T. Bakas, Effects of layering and magnetic annealing on the texture of CoPt films, *J. Magn. Magn. Mater.* **322**, L61-L63 (2010).
52. A. Markou, K.G. Beltsios, I. Panagiotopoulos, M. -E. Vlachopoulou, A. Tserepi, V. Alexandrakis, T. Bakas, T. Dimopoulos, Magnetic properties of Co films and Co/Pt multilayers deposited on PDMS nanostructures. *J. Magn. Magn. Mater.* **321**, 2582 (2009).

Publications in Refereed International Conferences

1. S. Massabeau, J. Hawecker, E. Rongione, A. Markou, S. Krishnia, F. Godel, S. Collin, R. Lebrun, J. Tignon, J. Mangeney, T. Boulier, J.-M. George, C. Felser, H. Jaffrès, S. Dhillon, Spintronic THz emitters based on transition metals and semi-metals/Pt multilayers. 48th International Conference on Infrared, Millimeter, and Terahertz Waves, IRMMW-THz 2023-September, pp 1-2,10299209.
2. D. Hamara, G. Lange, A. Markou, R.-J. Slager, C. Ciccarelli, Helicity-Dependent Terahertz Emission from a Weyl Semimetal Mn₃Sn. *2023 IEEE International Magnetic Conference - Short Papers (INTERMAG Short Papers)*, Sendai, Japan, 2023, pp. 1-2, DOI: 10.1109/INTERMAGShortPapers58606.2023.10228819.
3. D. Liu, A. Pronin, A. Markou, C. Felser, M. Dressel, Terahertz anomalous Hall effect in Mn_{2-x}PtSn. International Conference on Infrared, Millimeter, and Terahertz Waves, IRMMW-THz 2019-September, 8873730.
4. G. Giannopoulos, R. Salikhov, L. Reichel, A. Markou, I. Panagiotopoulos, M. Farle, S. Fähler, V. Spycharis, D. Niarchos, Inducing coercivity and anisotropy into strained Fe-Co thin films, towards rare earth free permanent magnets applications. 2015 IEEE Magnetics Conference (INTERMAG), p. 1-1.

Publications in Conference Proceedings

1. D. Niarchos, G. Giannopoulos, M. Gjoka, H. Sarafidis, A. Markou, V. Psycharis, Towards rare earth free permanent magnets: A combinatorial approach. NATO Proceedings, The Impact of the Scarcity of Rare Earth Materials on Electrical Power Systems for NATO Applications, Brussels, Belgium, November 2014. DOI: 10.14339/STO-MP-AVT-231
2. A. Stancu, L. Stoleriu, I. Panagiotopoulos, A. Markou, V Alexandrakis, Preisach model for soft-hard bilayers. 7th International Symposium on Hysteresis Modeling and Macromagnetics (HMM-2009) held in Gaithersburg, MD, May 11-14, 2009, p. 101.

Overview of Scientific Work 2009-2023 (Google scholar citations)

NUMBER OF PUBLICATIONS (PEER-REVIEW) | **56**

MEAN IMPACT FACTOR (2022) | **6.55**

CITATIONS | **1003**

h-index | **18**

> 5 in *Nature Journals*; > 1 in *Science Advances (AAAS)*; > 2 in *Advanced Materials (Wiley)*; >2 in *ACS (Nano and Nano Letters)*; > 13 in *Physical Review Journals (APS)*; > 6 *Applied Physics Letters (AIP)*, > 1 *Editor's pick in APL Materials*; > 3 *rapid communications (letter) in Physical Review (APS)*.

(# Journals x **IF**₂₀₂₂)

- *Science Advances (AAAS): 1 × 13.6*
- *ACS Applied Materials & Interfaces (ACS): 1 × 9.5*
- *ACS Applied Electronic Materials (ACS): 2 × 4.7*
- *ACS Nano (ACS): 1 × 17.1*
- *ACS Nano Letters (ACS): 1 × 10.8*
- *Journal of Physical Chemistry A (ACS): 1 × 2.9*
- *Applied Physics Letters (AIP): 6 × 4.0*
- *Applied Physics Letters Materials (AIP): 3 × 6.1*
- *Journal of Applied Physics (AIP): 3 × 3.2*
- *Physical Review Applied (APS): 1 × 4.6*
- *Physical Review B (APS): 6 × 3.7*
- *Physical Review Materials (APS): 6 × 3.4*
- *Journal of Magnetism and Magnetic Materials (Elsevier): 8 × 2.7*
- *Metals (MDPI): 1 × 2.9*
- *Nanomaterials (MDPI): 1 × 5.3*
- *Nanoscale (RSC): 1 × 6.7*
- *Nature Communications (Springer Nature): 3 × 16.6*
- *Communications Physics (Springer Nature): 2 × 5.5*
- *Advanced Materials (Wiley): 2 × 29.4*
- *Advanced Materials Interfaces (Wiley): 1 × 5.4*
- *Angewandte Chemie (Wiley): 1 × 16.6*

Invited Talks

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1. *Chirality: Thin films*, Educational Seminar: Chirality at Max Planck Institute for Chemical Physics of Solids, January 24, 2022, Dresden, Germany.
 2. *Structural, Magnetic and Magnetotransport properties of Heusler Compounds*, Department of Physics, University of Ioannina, October 21, 2021, Ioannina, Greece.
 3. *Noncollinear antiferromagnetic Mn₃Sn films for spintronic applications*, German MBE Workshop 2018, 79108 Freiburg, Germany, October 11-12, 2018.
 4. *Heusler Compounds: Towards Rare-Earth-Free Permanent Magnets*, CIMTEC 2018, 8th Forum on New Materials, Perugia, Italy, June 10-14, 2018.
 5. *Growth and characterization of thin films of Heusler compounds*, 3rd joint workshop of the Weizmann Institute of Science and the Max Planck Institute for Chemical Physics of Solids on topological states of matter, Topology meets materials, Jerusalem, Israel, February 25-26, 2018.
 6. *Hexagonal non-collinear antiferromagnets*, Spintronics meeting in Lanna, November 20-21, 2017, Prague, Czechia.
 7. *Tunable magnetic properties in Mn-Fe-Ga films*, Symposium on Heusler compounds as hard magnetic materials, MPI CPFS and Fraunhofer IMWS, Dresden, Germany, March 24, 2017.
 8. *Deposition and characterization of hard magnetic phases by sputtering*, Max Planck Institute for Chemical Physics of Solids, Dresden, Germany, November 9, 2015.

Participation in Conferences

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1. *Topological Hall effect in epitaxial thin films of tetragonal inverse Heusler compounds*, XXXVII PanHellenic Conference on Solid State Physics and Materials Science,

- September 17 - 20, 2023, Thessaloniki, Greece. (Oral presentation)
2. *Topological Hall effect in epitaxial thin films of tetragonal Heusler compounds*, A. Markou, P. Swekis, J. Gayles, S. S. P. Parkin, C. Felser, 15th Joint MMM-INTERMAG Conference (2022 Joint), virtual, New Orleans, USA, January 10-14, 2022. (Oral presentation).
 3. Annual Meeting of DPG and DPG-Tagung (DPG Meeting) of the Condensed Matter Section (SKM), virtual, September 27 – October 1, 2021. (co-chairman of Session - Skyrmions II).
 4. Topological Matter Conference, June 28-July 1, 2021 (virtual conference).
 5. *Topological Hall effect in tetragonal Heusler thin films*, A. Markou, P. Swekis, P. K. Sivakumar, S. P. P. Parkin, C. Felser, The European Conference Physics of Magnetism (PM' 21), Poznań, Poland, June 28 - July 02, 2021. (Oral presentation).
 6. *Topological Hall effect in thin films of the tetragonal inverse Heusler compound $MnxPtSn$* , A. Markou, J. Gayles, P. Swekis, C. Felser, Joint European Magnetic Symposia (JEMS), Lisbon, Portugal, December 7-11, 2020. (Oral presentation).
 7. *Thickness dependence of the anomalous Hall effect in thin films of the magnetic Weyl Co_2MnGa* , A. Markou, L. Zhang, D. Kriegner, Y.C. Chen, J. Gayles, Y. Sun, C. Felser DPG Spring Meeting 2019 of the Condensed Matter Section (SKM), Regensburg, Germany, March 31- April 5, 2019. (Poster).
 8. *Non-collinear antiferromagnetic Mn_3Sn films*, A. Markou, J. M. Taylor, A. Kalache, P. Werner, C. Felser, DPG Spring Meeting 2018 of the Condensed Matter Section (SKM) together with the EPS, Berlin, Germany, March 11-16, 2018. (Oral presentation).
 9. *Deposition and characterization of hexagonal non-collinear antiferromagnetic Mn_3Sn films*, A. Markou, A. Kalache, P. Werner, C. Felser, Euromat 2017, Thessaloniki, Greece, September 17-22, 2017. (Poster).
 10. A) *Structural, morphological and magnetic characterization non-collinear antiferromagnetic Mn_3Sn films*, A. Markou, P. Werner, Claudia Felser
B) *Magnetization and ferromagnetic resonance of Co_2MnGa films*, P. Swekis, A. Markou, Y. C. Cheng, J. Sichelschmidt, S. T. B. Gönnenwein, C. Felser Gordon Research Conference (GRC), Spin Dynamics in Nanostructures (GRS), Les Diablerets, Switzerland, July 16-21, 2017. (Posters)
 11. *Mn-Fe-Ga films with perpendicular anisotropy*, A. Markou, A. Kalache, S. Selle, T. Höche, G. H. Fecher, and Claudia Felser, DPG Spring Meeting 2017 of the Condensed Matter Section (SKM), Dresden, Germany, March 19-24, 2017. (Oral presentation).
 12. *Deposition and characterization of novel $Fe_{2-x}NiSn$ ($x=0-1$) Heusler alloy films*, A. Markou, I. Panagiotopoulos M. Gkioka, M. Spasova, M. Farle, and D. Niarchos, Joint European Magnetic Symposia (JEMS), Rhodes, Greece, August 25-30, 2013. (Poster).
 13. *FePt nanostructures obtained by polystyrene sphere array masks*, A. Markou, I. Panagiotopoulos, and T. Bakas, XXVIII PanHellenic Conference on Solid State Physics and Materials Science, Patra, Greece, September 23-26, 2012. (Oral presentation).
 14. *Magnetic annealing of CoPt films and Co/Pt bilayers*, A. Markou, I. Panagiotopoulos, T. Bakas, W.F. Li, and G.C. Hadjipanayis, XXVI PanHellenic Conference on Solid State Physics and Materials Science, Ioannina, Greece, September 26-29, 2010. (Poster)
 15. *Magnetic thin films deposited on PDMS nanotemplates*, A. Markou, K.G. Beltsios, I. Panagiotopoulos, M.-E. Vlachopoulou, A. Tserepi, V. Alexandrakis, T. Bakas, and T. Dimopoulos, XXV PanHellenic Conference on Solid State Physics and Materials Science, Thessaloniki, Greece, September 20-23, 2009. (Poster).

Participation in Workshops and Symposia

1. *Noncollinear antiferromagnetic Mn₃Sn films*, A. Markou, J. M. Taylor, A. Kalache, P. Werner, S. S. P. Parkin, and C. Felser, Future perspectives on novel magnetic materials, Santorini, Greece, May 29-June 2, (2018). (Poster).
2. Mini-Symposium on Spintronics and 2D Materials, MPI Halle, Germany, May 2, 2016.
3. Electroceramics and applications, Hellenic Ceramic Society (HCS) meeting, Ioannina, Greece, September 29, 2010.

Professional Memberships

1. Deutsche Physikalische Gesellschaft.

Member of Organizing Committees

1. Member of the program committee in “2023 Topological Matter Conference” (28-31 March 2023, Athens, Greece).
2. Member of the local committee in “Joined European Magnetic Symposia 2013” (25-30 August 2013, Rhodes, Greece).

Journal Reviews

- ACS Applied Electronic Materials (ACS).
- Applied Physics Letters, Applied Physics Letters Materials, Journal of Applied Physics (AIP).
- Physical Review Letters, Physical Review Research, Physical Review B, Physical Review X and Physical Review Materials (APS).
- Journal of Magnetism and Magnetic Materials, Physica B: Condensed Matter (Elsevier).
- Crystals, Materials, Metals, Nanomaterials (MDPI).
- Scientific Reports και Communications Materials (Nature Portfolio).
- Journal of Superconductivity and Novel Magnetism, Journal of Minerals (Springer Nature).
- Advanced Materials, Advanced Functional Materials, Advanced Science, Advanced Materials Interfaces, Advanced Electronic Materials (Wiley-VCH).
- In scientific Conferences such as INTERMAG (IEEE Transactions on Magnetism).

Reviewing Activities

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| 2023 | Reviewer for a Ph. D. thesis from the Academic Board of the Ph.D. Course in SCIENZA E NANOTECNOLOGIA DEI MATERIALI, University of Milan, Italy. |
| 2021 | Evaluator, 16th Call of Zukunftskolleg Fellowship Programme, University of Konstanz, Germany. |

Academic service

- *Long Night of Science*, Max Planck Institute for Chemical Physics of Solids, 2016 and 2018.