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EDUCATION

2012- Doctoral studies in physics at CUNI Faculty of mathematics and physics, Prague, Study Programme Physics of Condensed Matter and Materials Research

1985-1991 CUNI Faculty of mathematics and physics, Prague, master studies, Study Programme Physics of Condensed Matter

WORK EXPERIENCE

2020 - Specialist in R&D at the Institute of Physics of the Czech Academy of Sciences, Group of Dr. Oleg Heczko, Department of Magnetic Measurements and Materials

2012 - Researcher at the Faculty of Mathematics and Physics of Charles University, Group of Dr. Jaroslav Kohout, Laboratory of Mössbauer spectroscopy, Department of Low-Temperature Physics

2002-2012 Institute of Criminalistics Prague (Czech forensic institute), forensic expert in forensic chemistry and physics

1992-2002 Institute of Criminalistics Prague (Czech forensic institute), forensic expert in firearms identification and forensic ballistics

1986-1987 technician, Faculty of Mathematics and Physics, Van de Graaf accelerator

CONTRIBUTION TO RESEARCH PROJECTS

2019 - 2021 GAČR 19-02584S - Modification of Néel and Brownian relaxation properties of nanoparticles for magnetic imaging methods

2019 - 2021 GAČR 19-00925S - Magnetic and magnetoacoustic properties of high-anisotropic intermetallic alloys

2017 - 2020 GAČR 17-00062S - Explanation of modulated structures of Heusler alloys

2016 - 2018 GAČR 16-04340S - Oxide nanomagnets, their properties and interactions with biological systems

2014 - 2016 GAČR 14-12449S - Impact of radiation on distinctive physical properties of advanced materials for nuclear facilities

2013 - 2015 GAUK 8313 - Hyperfine interactions in multiferroics

2011 - 2014 GAČR P204/10/0035 - Hyperfine interactions in nanosized and low-dimensional iron oxides

PUBLICATIONS

Stefanik, M., Cesnek, M., Sklenka, L., Kmjec, T., & Miglierini, M. (2020). Neutron activation analysis of meteorites at the VR-1 training reactor. *Radiation Physics and Chemistry*, 171, 108675.
<https://doi.org/10.1016/j.radphyschem.2019.108675>

Kubíčková, L., Koktan, J., Kořínková, T., Klementová, M., Kmječ, T., Kohout, J., ... Kaman, O. (2020). Zn-substituted iron oxide nanoparticles from thermal decomposition and their thermally treated

derivatives for magnetic solid-phase extraction. *Journal of Magnetism and Magnetic Materials*, 498. <https://doi.org/10.1016/j.jmmm.2019.166083>

Kubíčková, L., Kaman, O., Veverka, P., Herynek, V., Brázda, P., Vosmanská, M., ... Kohout, J. (2020). The ϵ -Al_xFe_{2-x}O₃ nanomagnets as MRI contrast agents: Factors influencing transverse relaxivity. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 589. <https://doi.org/10.1016/j.colsurfa.2020.124423>

Kmječ, T., Kohout, J., Dopita, M., Veverka, M., & Kuriplach, J. (2019). Mössbauer Spectroscopy of Triphylite (LiFePO₄) at Low Temperatures. *Condensed Matter*, 4(4), 86. <https://doi.org/10.3390/condmat4040086>

Miglierini, M. B., Pašteka, L., Cesnek, M., Kmječ, T., Bujdoš, M., & Kohout, J. (2019). Influence of surface treatment on microstructure of stainless steels studied by Mössbauer spectrometry. *Journal of Radioanalytical and Nuclear Chemistry*, 322(3), 1495–1503. <https://doi.org/10.1007/s10967-019-06737-w>

Mohammadiparsa, N., Habibi, S., Dekan, J., Janotová, I., Švec, P., Galdun, L., ... Miglierini, M. (2019). Mössbauer study and magnetic properties of Fe–Si–B–Cu amorphous systems with minor substitution of carbon. *Journal of Radioanalytical and Nuclear Chemistry*, 322(2), 691–697. <https://doi.org/10.1007/s10967-019-06811-3>

Argymbek, B., Kmjec, T., Chlan, V., Kohout, J., Kichanov, S. E., Kozlenko, D. P., & Savenko, B. N. (2019). The crystal and magnetic structures of the ordered perovskite Pb₂FeSbO₆ studied by neutron diffraction and Mössbauer spectroscopy. *Journal of Magnetism and Magnetic Materials*, 477, 334–339. <https://doi.org/10.1016/j.jmmm.2019.01.076>

Kubániová, D., Kubíčková, L., Kmječ, T., Závěta, K., Nižňanský, D., Brázda, P., ... Kohout, J. (2019). Hematite: Morin temperature of nanoparticles with different size. *Journal of Magnetism and Magnetic Materials*, 475, 611–619. <https://doi.org/10.1016/j.jmmm.2018.11.126>

Kmjec, T., Adamec, M., Kubaniova, D., Plocek, J., Dopita, M., Cesnek, M., ... Kohout, J. (2019). 57Fe-enriched perovskites M(Fe0.5Nb0.5)O₃ (M – Pb, Ba) studied by Mössbauer spectroscopy, NMR and XRD in the wide temperature range 4.2–533 K. *Journal of Magnetism and Magnetic Materials*, 475, 334–344. <https://doi.org/10.1016/j.jmmm.2018.11.087>

Kubániová, D., Brázda, P., Závěta, K., Kmječ, T., Klementová, M., & Kohout, J. (2019). Identification of ferric oxide polymorphs in nanoparticles prepared by sol-gel method and maximization of ϵ -Fe₂O₃ content. *Journal of Magnetism and Magnetic Materials*, 472, 96–103. <https://doi.org/10.1016/j.jmmm.2018.09.107>

Tabor, E., Sádovská, G., Bernauer, M., Sazama, P., Nováková, J., Fíla, V., ... Sobalík, Z. (2019). Feasibility of application of iron zeolites for high-temperature decomposition of N₂O under real conditions of the technology for nitric acid production. *Applied Catalysis B: Environmental*, 240, 358–366. <https://doi.org/10.1016/j.apcatb.2017.11.014>

Sádovská, G., Tabor, E., Bernauer, M., Sazama, P., Fíla, V., Kmječ, T., ... Sobalík, Z. (2018). FeOx/Al₂O₃ catalysts for high-temperature decomposition of N₂O under conditions of NH₃ oxidation in nitric acid production. *Catalysis Science and Technology*, 8(11), 2841–2852. <https://doi.org/10.1039/c8cy00383a>

Cesnek, M., Štefánik, M., Miglierini, M., Kmječ, T., & Sklenka, L. (2017). Analysis of traditional Tibetan pills. *Hyperfine Interactions*, 238(1). <https://doi.org/10.1007/s10751-017-1469-8>

Vlček, M., Čížek, J., Lukáč, F., Hruška, P., Smola, B., Stulíková, I., ... Vlasák, T. (2017). Hydrogen absorption in Mg-Gd alloy. *International Journal of Hydrogen Energy*, 42(35), 22598–22604. <https://doi.org/10.1016/j.ijhydene.2017.04.012>

Cesnek, M., Miglierini, M., Kmječ, T., Kohout, T., Amini, N., Janičkovič, D., & Matúš, P. (2017). Temperature behaviour of hyperfine magnetic fields in a Fe-Co-Si-B-Mo-P metallic glass followed with ⁵⁷Fe Mössbauer spectrometry. In *Acta Physica Polonica A* (Vol. 131, pp. 744–746). <https://doi.org/10.12693/APhysPolA.131.744>

Čížek, J., Hruška, P., Vlasák, T., Vlček, M., Janeček, M., Minárik, P., ... Kim, H. S. (2017). Microstructure development of ultra fine grained Mg-22 wt%Gd alloy prepared by high pressure torsion. *Materials Science and Engineering A*, 704, 181–191. <https://doi.org/10.1016/j.msea.2017.07.100>

Kubíčková, L., Kohout, J., Brázda, P., Veverka, M., Kmječ, T., Kubániová, D., ... Závěta, K. (2016). Impact of silica environment on hyperfine interactions in -Fe₂O₃ nanoparticles. *Hyperfine Interactions*, 237(1). <https://doi.org/10.1007/s10751-016-1356-8>

Cesnek, M., Štefánik, M., Kmječ, T., & Miglierini, M. (2016). Iron meteorite fragment studied by atomic and nuclear analytical methods. In *AIP Conference Proceedings* (Vol. 1781). <https://doi.org/10.1063/1.4966011>

Kmječ, T., Kohout, J., Lančok, J., Fitl, P., Lančok, A., Schneeweis, O., & Závěta, K. (2016). The Fe-Au interface: Hyperfine interactions of ⁵⁷Fe by Mössbauer transmission and conversion electron spectroscopy. In *AIP Conference Proceedings* (Vol. 1781). American Institute of Physics Inc. <https://doi.org/10.1063/1.4966000>

Lančok, A., Kmječ, T., Štefánik, M., Bezdička, P., Klementová, M., & Miglierini, M. (2016). Mössbauer spectrometry of LC 200N steel. In *AIP Conference Proceedings* (Vol. 1781). <https://doi.org/10.1063/1.4966013>

Kmječ, T., Kohout, J., Lančok, J., Fitl, P., Lančok, A., Schneeweis, O., & Závěta, K. (2016). The Fe-Au interface: Hyperfine interactions of ⁵⁷Fe by Mössbauer transmission and conversion electron spectroscopy. In *AIP Conference Proceedings* (Vol. 1781). <https://doi.org/10.1063/1.4966000>

Kohout, J., Brázda, P., Závěta, K., Kubániová, D., Kmječ, T., Kubíčková, L., ... Lančok, A. (2015). The magnetic transition in ε-Fe₂O₃ nanoparticles: Magnetic properties and hyperfine interactions from Mössbauer spectroscopy. *Journal of Applied Physics*, 117(17). <https://doi.org/10.1063/1.4907610>

Kohout, J., Křišť'an, P., Kubániová, D., Kmječ, T., Závěta, K., Štepánková, H., ... Miglierini, M. B. (2015). Low temperature behavior of hyperfine fields in amorphous and nanocrystalline FeMoCuB. *Journal of Applied Physics*, 117(17). <https://doi.org/10.1063/1.4915098>

Jaroslav Kohout, Petr Křišť'an, Denisa Kubániová, Tomáš Kmječ, Karel Závěta, Helena Štepánková, A., & Lančok, L'ubomír Sklenka, Peter Matúš, and M. B. M. (2015). Low temperature behavior of hyperfine fields in amorphous and nanocrystalline FeMoCuB. *JOURNAL OF APPLIED PHYSICS*, 117. [https://doi.org/\[http://dx.doi.org/10.1063/1.4915098](https://doi.org/[http://dx.doi.org/10.1063/1.4915098)

Lančok, A., Kmječ, T., Štefánik, M., Sklenka, L., & Miglierini, M. (2015). Structural characterization of highly corrosion-resistant steel. *Croatica Chemica Acta*, 88(4), 355–361.
<https://doi.org/10.5562/cca2794>

Brázda, P., Kohout, J., Bezdická, P., & Kmječ, T. (2014). α -Fe₂O₃ versus β -Fe₂O₃: Controlling the phase of the transformation product of ε -Fe₂O₃ in the Fe₂O₃/SiO₂ system. *Crystal Growth and Design*, 14(3), 1039–1046. <https://doi.org/10.1021/cg4015114>

Fojtášek, L., & Kmječ, T. (2005). Time periods of GSR particles deposition after discharge-final results. *Forensic Science International*, 153(2–3), 132–135.
<https://doi.org/10.1016/j.forsciint.2004.09.127>

Čížek, J., Procházka, I., Kmječ, T., & Vostrý, P. (2000). Using of modified trapping model in positron-lifetime study of cold-worked aluminum. *Physica Status Solidi (A) Applied Research*, 180(2), 439–458. [https://doi.org/10.1002/1521-396X\(200008\)180:2<439::AID-PSSA439>3.0.CO;2-9](https://doi.org/10.1002/1521-396X(200008)180:2<439::AID-PSSA439>3.0.CO;2-9)