

# MÖSSBAUER SPECTROSCOPY IN MATERIALS SCIENCE 2018

## SCIENTIFIC PROGRAMME

MONDAY, JUNE 25, 2018

9:00 - 12:00 **Registration**

12:00 - 13:00 **Lunch**

13:00 - 13:15 **Opening Session**

A. Lančok

13:15 - 16:00

chair: A. Lančok

13:15 - 14:00 **How and why I met Mössbauer spectroscopy**

**PL 01**

K. Závěta

14:00 - 14:30 **Ferrates and ferrites - applications in water treatment**

L. Machala, V.K. Sharma, R. Zboril

14:30 - 15:00 **Mössbauer spectroscopy of Mundrabilla and Gibeon iron meteorites**

M.V. Goryunov, M.I. Oshtrakh, Z. Klencsár, E. Kuzmann, V.I. Grokhovsky, V.A. Semionkin

15:00 - 15:30 **Application of heat resistant materials in development of sealed reaction chambers for in situ Mössbauer spectroscopy**

M. Jiruš, J. Kopp, J. Pechoušek

15:30 - 16:00 **Investigations of siderite transformation by thermophilic microbial culture**

M.A. Gracheva, N.I. Chistyakova, A.V. Antonova, V.S. Rusakov, Yu.A. Koksharov, T.Yu. Kiseleva, D.G. Zavarzina

16:00 - 16:30 **Coffee break**

16:30 - 18:15

chair: M. Miglierini

16:30 - 17:15 **Mössbauer spectroscopy in microbial transformation of iron-containing minerals in alkaline conditions**

**PL 02**

N.I. Chistyakova, A.V. Antonova, M.A. Gracheva, D.I. Pchelina, T.Yu. Kiseleva, D.G. Zavarzina, T.N. Zhilina, S.N. Gavrillov

17:15 - 17:45 **Study of iron functionalized nanoparticles of titanium dioxide**

L. Volfová, A. Lančok

17:45 - 18:15 **Structural features of oxygen deficient strontium ferrite  $\text{SrFeO}_{3-\delta}$**

V. Sedych, O.G. Rybchenko, A.N. Nekrasov, V.I. Kulakov

19:00 - 22:00 **Welcome party**

TUESDAY, JUNE 26, 2018

9:00 - 10:45 chair: K. Závěta	9:00 - 9:45 <b>PL 03</b>	<b>Characterization of direct current and pulse plated novel quaternary Sn-Fe-Co-Ni alloys</b> <u>E. Kuzmann</u> , L. Sziráki, S. Stichleutner, Z. Homonnay, D. Zalka, G. B. Lak, M. El-Sharif, C. U. Chisholm
	9:45 - 10:15	<b>Crystallization of metallic glasses inspected by <i>ex situ</i> and <i>in situ</i> techniques based upon hyperfine interactions</b> <u>M. B. Miglierini</u> , V. Procházka, V. Vrba
	10:15 - 10:45	<b>Probe Mössbauer study of manganite ScMnO<sub>3</sub></b> <u>S. Šandalová</u> , I. Glazkova, A. Sobolev, I. Presniakov
10:45 - 11:15 Coffee break		
11:15 - 13:00 chair: L. Machala	11:15 - 11:45	<b>Characterization of nanoparticle systems considered for plant nutrition</b> <u>Z. Klencsár</u> , V.K. Kis, S. Stichleutner, L.K. Varga, A. Ábrahám, E.Gy. Szabó, L. Szabó, J. Mantilla, J.A.H. Coaquira, V.K. Garg
	11:45 - 12:15	<b>Spleen tissues studied by Mössbauer spectrometry</b> <u>I. Bonková</u> , M. Miglierini, T. Kmječ, M. Kopáni, M. Bujdoš, M. Štefánik
	12:15 - 12:45	<b>Investigations of the phase separation in lanthanum manganites doped with calcium atoms</b> <u>D.I. Pchelina</u> , I.Yu. Medvedskaya, N.I. Chistyakova, Yu.A. Alekhina, V.D. Sedykh, V.S. Rusakov
	12:45 - 13:00	<b>Investigations of iron compounds transformations by syntrophic culture</b> <u>A.V. Antonova</u> , N.I. Chistyakova, M.A. Gracheva, V.S. Rusakov, D.G. Zavarzina, T.N. Zhilina
13:00 - 14:30 Lunch		
14:30 - 16:00 chair: J. Sitek	14:30 - 15:00	<b>Mössbauer study of Eu<sub>0.57</sub>Ca<sub>0.43</sub>Fe<sub>2</sub>As<sub>2</sub> and Eu<sub>0.73</sub>Ca<sub>0.27</sub>(Fe<sub>0.87</sub>Co<sub>0.13</sub>)<sub>2</sub>As<sub>2</sub>: A comparison to '122' iron-based superconductors parent compounds EuFe<sub>2</sub>As<sub>2</sub> and CaFe<sub>2</sub>As<sub>2</sub></b> <u>K. Komędera</u> , A. Błachowski, K. Ruebenbauer, J. Żukrowski, S. M. Dubiel, L. M. Tran, M. Babij, Z. Bukowski
	15:00 - 15:30	<b>Magnetic and Structural Transitions in Pb(Fe<sub>0.5</sub>M<sub>0.5</sub>)O<sub>3</sub> (M=Nb, Sb): Mössbauer and XRD study</b> <u>T. Kmječ</u> , J. Plocek, K. Závěta, J. Kohout
	15:30 - 16:00	<b>Comparison of iron bearing minerals from regions of Boda Claystone Formation: variations in genesis</b> <u>K. Lázár</u> , Z. Máthé
16:00 - 16:30 Coffee break		
16:30 - 19:00 chair: M. Mašláš	16:30 - 17:00	<b>Nanoparticles of alpha-Fe precipitated from Cu-Fe alloy</b> <u>M. Cesnek</u> , O. Milkovič, T. Kmječ, J. Kohout, M. Miglierini
	17:00 - 17:30	<b>Thermally induced transformations of iron(iii) oxide polymorphs in various atmospheres</b> <u>J. Havlakova</u> , J. Tucek, J. Kaslik, O. Malina, I. Medrik, R. Zboril
	17:30 - 18:00	<b>Preparation of magnetite powder by thermal decomposition of ferrous oxalate in the combined atmosphere of inert and conversion gases</b> <u>J. Kopp</u> , P. Novák, J. Kašík, J. Pechoušek
	18:00 - 18:30	<b>Creation of nanocrystalline alloys after Cu ions implantation in amorphous precursors</b> <u>J. Sitek</u> , D.Holková, J.Dekan, P.Novák, J.Dobrovodský
	18:30 - 19:00	<b>Copper ferrite: hyperfine interactions of <sup>57</sup>Fe nuclei and distribution of cations</b> <u>J. Kohout</u> , T. Kmječ, J. Plocek, P. Bezdička, K. Závěta

WEDNESDAY, JUNE 27, 2018

9:00 - 10:45 chair: K. Lázár	9:00 - 9:45	<b>Past, present and future of Mössbauer spectrometer designs</b> <u>M. Mashlan</u>
	9:45 - 10:15	<b>Iron zeolites for high temperature N<sub>2</sub>O decomposition</b> <u>E. Tabor</u> , G. Sádovská, M. Bernauer, P. Sazama, T. Kmječ, J. Kohout, K. Závěta, Z. Sobalík
	10:15 - 10:45	<b>Conversion Electron Mössbauer Spectrometer operating at low and high temperatures with an Yttrium aluminium garnet: Cerium Scintillator</b> <u>F. Linderhof</u> , M. Mášlaň

10:45 - 11:15 Coffee break

11:15 - 13:00 chair: V. Semenov	11:15 - 11:45	<b>Synchrotron Mössbauer spectroscopy unveils the properties of a monolayer of single molecule magnets deposited on gold</b> <u>A. Cini</u> , M. Mannini, A. Cornia, M. Fittipaldi, G. Spina, F. Totti, A. I. Chumakov, R. Rüffer, R. Sessoli
	11:45 - 12:15	<b>The effects of Xe swift ion bombardment on the amorphous structure of a vitropem type alloy</b> <u>S. Michalik</u> , M. Cesnek, M. Pavlovic, M. Miglierini, M. Drakopoulos
	12:15 - 12:45	<b>Identification of spatially localised inhomogeneities in metallic glasses by in-situ nuclear forward scattering</b> <u>V. Vrba</u> , V. Procházka, M. Miglierini
	12:45 - 13:00	<b>Microstructure of steels for nuclear facilities</b> <u>L. Pašteka</u> , M. Miglierini, T. Kmječ, M. Štefánik, M. Bujdoš

13:00 - 14:30 Lunch

14:30 - 18:30 **Excursion**

19:00 - 23:00 **Conference dinner**

THURSDAY, JUNE 28, 2018

9:00 - 10:45 chair: N. Chistyakova	9:00 - 9:45 <b>PL 05</b>	<b><math>^{119}\text{Sn}</math> and <math>^{57}\text{Fe}</math> Mössbauer studies of visible-light activated photocatalytic and photo-fenton reactive tin and iron silicate glasses</b> B. Kobzi, <u>S. Kubuki</u> , E. Kuzmann, K. Sinkó, Z. Homonnay, S. Krehula, M. Ristić, S. Musić, T. Nishida
	9:45 - 10:15	<b>Low dimensionality in divalent tin-containing materials and its study by X-ray diffraction and <math>^{119}\text{Sn}</math> Mössbauer spectroscopy</b> <u>G. Dénès</u> , M.C. Madamba, A. Muntasar, K. Tam, H. Merazig
	10:15 - 10:45	<b>Nanomagnets <math>\epsilon\text{-Al}_x\text{Fe}_{2-x}\text{O}_3</math> and <math>\epsilon\text{-Ga}_x\text{Fe}_{2-x}\text{O}_3</math>: Structure, magnetism and hyperfine parameters</b> <u>L. Kubíčková</u> , J. Kohout, P. Brázda, O. Kaman, T. Kmječ, D. Kubániová
10:45 - 11:15 Coffee break		
11:15 - 13:00 chair: G. Denes	11:15 - 11:45	<b><math>^{197}\text{Au}</math> Mössbauer study of nanosized Au-Cu/<math>\text{Al}_2\text{O}_3</math> bimetallic catalysts</b> <u>S. Stichleutner</u> , A. Beck, G. Nagy, D.F. Srankó, Gy. Sáfrán, F. Schmidt, K. Lázár
	11:45 - 12:15	<b>Mössbauer investigations of iron states in products from the arc synthesis of Fe-carbon nanoclusters</b> <u>V. G. Semenov</u> , V. V. Panchuk, V. S. Kozlov
	12:15 - 12:45	<b>Martensitic transformation in ferromagnetic shape memory alloys studied by Mossbauer spectroscopy</b> <u>O. Heczko</u>
	12:45 - 13:00	<b>Microstructure and magnetic behavior of coherent <math>\text{A}_2 + \text{L}_{21}</math> Fe-Al-Ti</b> <u>Y. Jiraskova</u> , N. Pizurova, M. Friak, D. Janickovic
13:00 - 14:30 Lunch		
14:30 - 16:00 chair: O. Heczko	14:30 - 15:00	<b>The dynamical behavior of <math>^{57}\text{Fe}</math> probe nuclei in layered perovskites <math>\text{La}_2\text{Li}_{0.5}\text{M}_{0.5}\text{O}_4</math> (<math>M = \text{Co}, \text{Ni}, \text{Cu}</math>)</b> <u>I.S. Glazkova</u> , A.V. Sobolev, V.S. Rusakov, A.S. Moskvín, I.A. Presniakov
	15:00 - 15:30	<b>Magnetic structures of the <math>\text{Fe}_3\text{PO}_7</math> and <math>\text{Fe}_7(\text{PO}_4)_6</math> investigated by <math>^{57}\text{Fe}</math> Mössbauer spectroscopy</b> <u>A.V. Sobolev</u> , A.A. Akulenko, I.S. Glazkova1, A.A. Belik, T. Furubayashi, I.A. Presniakov
	15:30 - 16:00	<b>Mössbauer study of doped lithium iron phosphates: <math>\text{Li}_x\text{Fe}_{1-y}\text{M}_y\text{PO}_4</math> (<math>M = \text{Mg}, \text{Mn}, \text{Co}, \text{Ni}, \text{Zn}</math>)</b> <u>S. Yaroslavtsev</u> , N. Vostrov, S. Novikova, A. Skundin, T. Kulova, A. Yaroslavtsev, V. Rusakov
16:00 - 16:30 Coffee break		
16:30 - 18:30 chair: V. Semenov	16:30 - 17:00	<b>Hyperfine parameters of pure and metal-substituted orthorhombic <math>\epsilon\text{-M}_x\text{Fe}_{2-x}\text{O}_3</math> from DFT calculations (<math>M = \text{Al}, \text{Ga}, \text{Si}</math>)</b> <u>D. Kubániová</u> , J. Kuriplach
	17:00 - 17:30	<b>Preparation of pure and doped <math>\epsilon\text{-Fe}_2\text{O}_3</math> nanoparticles by sol-gel process, structural and magnetic characterization</b> <u>M. Tomíčková</u> , J. Tuček, M. Gich, O. Malina, R. Zbořil
	17:30 - 18:00	<b>Local crystal and magnetic structures of <math>R_2\text{NiMnO}_6</math> (<math>R = \text{Sc}, \text{In}, \text{Tl}</math>) double perovskites: a Mössbauer study on the <math>^{61}\text{Ni}</math> and <math>^{57}\text{Fe}</math> nuclei</b> <u>A.V. Sobolev</u> , A.A. Belik, I. Sergueev, A. Chumakov, A.A. Akulenko, I.S. Glazkova, I.A. Presniakov
	18:00 - 18:30	<b>Mössbauer investigations of iron - containig materials for different bio-and chemical applications</b> <u>A. Lančok</u>
18:30 - 18:45 <b>Closing Session</b>		