

Curriculum vitae



Personal data

Name: **Dr. Imre Miklós Szilágyi , PhD**
Date of birth: 27 December 1979
Family status: Married, father of two daughters
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Professional experience

2017- Associate professor, Budapest University of Technology and Economics, Department of Inorganic and Analytical Chemistry
2012-2017 Research fellow, Budapest University of Technology and Economics, Department of Inorganic and Analytical Chemistry, MTA-BME Technical Analytical Chemistry Research Group
2010-2012 Experienced researcher, Laboratory of Inorganic Chemistry, University of Helsinki, Finland
2010-2011 Research fellow, Budapest University of Technology and Economics, Department of Inorganic and Analytical Chemistry, Materials Structure and Modeling Research Group of the Hungarian Academy of Sciences,
2007-2009 Assistant research fellow, Budapest University of Technology and Economics, Department of Inorganic and Analytical Chemistry, Materials Structure and Modeling Research Group of the Hungarian Academy of Sciences,

Education

2005-2009 Budapest University of Technology and Economics (BME), Faculty of Chemical Technology and Biotechnology, George Olah PhD School (Supervisors: Prof. Dr. György Pokol, Dr. János Madarász), PhD in chemistry (2009, summa cum laude)
2004-2005 University of Szeged, Faculty of Natural Sciences, Chemistry PhD School (Supervisor: Prof. Dr. Imre Dékány)
1998-2004 Budapest University of Technology and Economics, Faculty of Chemical Technology and Biotechnology, MSc in chemical engineering (2004, with distinction)
1994-1998 Szeged, Endre Ságvári Secondary School, class specialized in physics (excellent final exam, 1998)

Language skills

- English: fluent (EU C1 level exam, 1997, ELTE-Origo Hungarian State Language Exam)
- German: fluent (EU C1 level exam, 2006, Goethe Institut ZMP)
- French: basic

Scientific activity

Publications

- The publication list of Dr. Szilágyi is available online: <https://vm.mtmt.hu/search/slist.php?lang=0&AuthorID=10018790> and <http://scholar.google.hu/citations?user=cyv2GzUAAAAJ&hl=hu>
- 70 international journal papers, 9 conference proceedings papers, 1 book, 2 book chapters, 1 patent
- 163 conference presentations (21 plenary/invited lectures, 102 oral and 40 poster presentations)
- Sum of impact factors: 130.187; h-index: 16 (www.mtmt.hu); 18 (Google Scholar); total citations/independent citations: 924/610 (www.mtmt.hu); 1095 (Google Scholar)

Awards and scholarships

- ÚNKP (New National Excellence Program) Scholarship (2017-2018)
- János Bolyai Fellowship of the Hungarian Academy of Sciences (2015-2018, to the best young scientists under 45 in Hungary)
- János Bolyai Fellowship of the Hungarian Academy of Sciences (2011-2014, to the best young scientists under 45 in Hungary)
- Grant for Young Researchers & Students from Central & Eastern Europe in the field of TA&C” (by Netzsch & CEEC-TAC) (2011, to the best young scientists in thermal analysis under 35 in Central and Eastern Europe)
- Young Scientist Award of the Hungarian Academy of Sciences (2010, to the best young scientists in Hungary under 35)
- Young Scientist Award of the Visegrad Academies (Hungary, Poland, Czech Republic, Slovakia) (to the best researcher under 35 in Hungary in materials science)
- EU Marie Curie Intra-European Fellowship (2010-2012)
- Innovative PhD Award in memory of Dr. Tibor Máthé (2009, to the best innovative PhD dissertation of Faculty of Chemical Technology and Biotechnology, BME)
- European Materials Research Society – Young Scientist Award (2009, E-MRS Graduate Student Award, to the best PhD students in materials science attending EMRS)
- Main prize of the Scopus Young Researcher Awards (2008, to the best young scientist in all fields under 30 in Hungary)
- Scopus Young Researcher Award in Chemistry (2008, to the best young scientist in chemistry under 30 in Hungary)
- Perkin-Elmer – ICTAC (International Confederation of Thermal Analysis and Calorimetry) Young Young Scientist Award (2008, to the best young scientists under 35 in thermal analysis worldwide)
- Deák Ferenc Scholarship (2008-2009, to the best PhD students in Hungary)
- Pro Patria et Scientia I. prize (2008, for best paper and presentation at „Tavaszi Szél” [Spring Wind] Conference, 23-25 May 2008, Budapest)
- Meisel Tibor prize (2004, to best student of the year at Faculty of Chemical Technology and Biotechnology, BME)
- II. prize at National Student Scientific Conference, Section of Chemistry and Chemical Technology (2003)
- II. prizes at Student Scientific Conference at BME (2003, 2002, 2001)
- Aschner Lipót research scholarship of General Electric Hungary and BME (2002-2004)
- Scholarship of the Hungarian Republic (2002-2004, to best students of the country)
- Scholarship of BME (2003/2004/II and 2001/2002/II semesters, to best students of BME)
- Scholarship of Faculty of Chemical Technology and Biotechnology, BME (2003/2004/II and 2002/2003/II semesters, to best students of the faculty)
- Irinyi János National Competition in Chemistry: placed at 19th (1996) and 17th (1995) rank
- Hevesy György National Competition in Chemistry: placed at 16th (1995) rank

Other recognitions

- Marie Curie success story: Based on the achieved results, the Marie Curie Intra-European Fellowship (2010-2012, University of Helsinki, Preparing complex nanostructures by atomic layer deposition, CompNanoALD) of I.M. Szilágyi has been chosen to be a Marie Curie success story, http://ec.europa.eu/research/infocentre/article_en.cfm?id=/research/star/index_en.cfm?p=ss-compnanoald&item=Infocentre&artid=28993
- Career Profile interview with I.M. Szilágyi in Science Careers (in the job and careers magazine of the journal Science): Elisabeth Pain: Testimony of a Young Christian Scientist. Science Careers, 19 February 2009, doi: 10.1126/science.caredita0900026, http://sciencecareers.sciencemag.org/career_magazine/previous_issues/articles/2009_02_20/caredita.a0900026

Research group

- Presently, he heads a research group of 1 postdoc, 5 PhD, 6 MSc and 5 BSc Hungarian, Azeri, Ghanan and Kenyan colleagues and students

Research travels

- University of Edinburgh (Scotland, 2015, 1 week)
- “Ilie Murgulecsu” Institute of Physical Chemistry of the Romanian Academy (Romania, 2013, 1 week)

- University of Helsinki (Finland, 2010-2012, full time experienced researcher through a Marie Curie Intra-European Fellowship)
- University of Zaragoza (Spain, 2007, 2 weeks, participant at Marie Curie NanoMemCourse EF1)
- Helsinki University of Technology (Finland, 2005, 4 weeks, research in a joint ALD project)
- Vienna University of Technology (Austria, 2003, 4 months, guest student)

Professional social activity

- Editor-in-Chief (2017-), Deputy Editor-in-Chief (2014-2016) and Editor (2012-2013) at the Journal of Thermal Analysis and Calorimetry
- Editorial Board member at the Journal of Thermal Engineering (2015-), European Chemical Bulletin (2014-), Associate Editor at ScienceJet (Nanoscience and Nanotechnology Section, 2015-)
- Honorary Advisory Editorial Board member at the Journal of Heat and Mass Transfer Research (2018-)
- Referee for Acta Materialia, ACS Applied Materials and Interfaces, ACS Applied Nano Materials, ACS Catalysis, Applied Surface Science, Advances in Materials Science and Engineering, Applied Catalysis B, Bulletin of the Chemical Society of Japan, ChemCatChem, Chemical Communications, Chemical Engineering Communications, Coatings, Dalton Transactions, European Chemical Bulletin, Industrial Engineering and Chemistry Research, Journal of Advanced Oxidation Technologies, Journal of the American Ceramic Society, Journal of the American Chemical Society, Journal of Brazilian Chemical Society, Journal of Inorganic Materials, Journal of Materials Science, Journal of Materials Chemistry C, Journal of Molecular Structure, Journal of Nanoscience and Nanotechnology, Journal of Radioanalytical and Nuclear Chemistry, Journal of Thermal Analysis and Calorimetry, Materials Chemistry and Physics, Materials Research Innovations, Materials Science and Engineering B, Materials Research Bulletin, Nanoscience and Nanotechnology Letters, Periodica Polytechnica, Physical Chemistry Chemical Physics, RSC Advances, Sensor Letters, Sensors and Actuator B, Science of Advanced Materials, Structural Chemistry, Surface Review and Letters, Thin Solid Films
- Vice president of the Hungarian Chapter of the Marie Curie Alumni Association (2016-)
- Vice president of the Thermoanalytical Group of the Hungarian Chemical Society (2011-2015)
- Member of the International Confederation of Thermal Analysis and Calorimetry (ICTAC, 2008-)
- Member of the European Materials Research Society (2008-)
- Member of the Hungarian Chemical Society (2007-)
- Member of the Hungarian Materials Science Society (2007-2008)
- Member of the Scientific Society for Silicate Industry, Hungary (2009)
- Chair of the 1st Journal of Thermal Analysis and Calorimetry and 6th V4 (Joint Czech–Hungarian–Polish–Slovakian) Thermoanalytical Conference (JTACC+V4, Budapest, Hungary, 6–9 June, 2017)
- Member of the scientific committee at the following conferences: 14th International Conference on Thermal Analysis and Calorimetry ICTAC, 14-18 September 2008 Sao Pedro, Brazilia); Central and Eastern European Conference on Thermal Analysis and Calorimetry CEEC-TAC3, 25-28 August 2015, Ljubljana, Slovenia; Advanced Materials World Congress, 04-08 February 2018, Singapore; 13th Conference on Calorimetry and Thermal Analysis of the Polish Society of Calorimetry and Thermal Analysis, 2-6 September 2018, Zakopane, Poland
- As a member of IAESTE (International Association for the Exchange of Students for Technical Experience) Hungary, participation in the coordination of the international student exchange program (2001-2002)

Research areas

- Inorganic chemistry, materials science: polytungstates, polymolybdates, organic/inorganic hybrid structures, metal complexes (2002-)
- Nanotechnology: nanostructures, core/shell nanocomposites, bionanocomposites, i.e. inorganic (TiO₂, ZnO, Al₂O₃, WO₃, FeWO₄, Au, Ag, Cu) nanoparticles, -tubes, -fibers, -sheets, -films; polymer (PMMA, PVP, Kapton) nanoparticles, -fibers, membrane, carbon nanostructures (carbon nanotubes and nanospheres, fullerene, graphene oxide), nanostructured biological samples (lotus leaf, bird feather) (2005-)
- Preparation: hydrothermal, sol-gel, solid-gas phase, electrospinning, annealing, ALD (atomic layer deposition)
- Analysis: Thermal analysis (TG/DTA-MS, TG-FTIR, DSC), XRD, SEM-EDX, TEM-ED, FTIR, Raman, UV-VIS, NMR, XPS, PL
- Applications: gas sensing, photocatalysis, catalysis, adsorption
- Analyzing the morphology, elemental composition, structure, thermal stability of various samples (integrated circuits, car seat heating filaments, air filters, textiles, plasma TV parts, soldering material, plastic car parts, etc.) coming from industrial partners (2006-)

Research projects

- NKFI-123631 (Hungarian-Thai international Cooperation grant), principal investigator (2018-2020, ca. 116000 EUR, from which the part of Dr. Szilágyi is ca. 58000 EUR, Application of oxide and carbon nanostructure based nanofluids in energy and thermal systems)
- ÚNKP-17-4-IV-BME-188, principal investigator (2017-2018, ca. 16000 EUR, Photocatalytic nanocomposites)
- VEKOP-2.3.2.-16-2017-00013, participant (2017-2021, ca. 2539000 EUR, from which the part of Dr. Szilágyi is ca. 90300 EUR, Materials science excellence center: development of environmental friendly processes for the efficient use of renewable energy and raw material sources and for the controlled release of their energy content)
- GINOP-2.2.1-15-2017-00084, participant (2017-2020, ca. 2516000 EUR, from which the part of Dr. Szilágyi is ca. 32000 EUR, Technology development to reduce the harmful contamination of industrial exhaust gases with the research of new, modified surface kaolinite clay mineral and zeolite composite catalysts)
- K 124212, participant (2017-2021, ca. 152000 EUR, from which the part of Dr. Szilágyi is ca. 42000 EUR, Photocatalytically active hollow-structured semiconductor oxides for environmental applications)
- János Bolyai Fellowship of the Hungarian Academy of Sciences, Principal investigator (2015-2018, ca. 16000 EUR funding from Hungarian Academy of Sciences, Photocatalytic and gas sensing semiconductor oxide nanofilms and nanocomposites)
- Bilateral Montenegro-Hungary Research and Technology program, Principal investigator (2016-2018, ca. 9000 EUR funding from National Research, Development and Innovation Office, Hungary, Nr. TÉT_15-1-2016-0036, Synthesis, physico-chemical and biological characterization of new transition metal complexes with pyrazole derivatives and their potential application)
- Hungarian-Romanian Academy Partnership Programme, Principal investigator (2016-2019, ca. 4000 EUR, Semiconductor oxide nanostructures for optical and solar applications)
- OTKA-PD-109129, Principal investigator (2013-2016, ca. 40000 EUR, WO₃-based photocatalysts and gas sensors prepared by atomic layer deposition (ALD))
- MTA Postdoctoral Programme, Principal investigator – Supervisor of Dr. Stefan Boyadjiev (2013-2015, ca. 35 000 EUR, Gas sensitive and electrochromic semiconductor metal oxide core/shell nanocomposites)
- Hungarian-Romanian Academy Partnership Programme, Principal investigator (2013-2015, ca. 4000 EUR, Transparent conductive oxide nanomaterials obtained by chemical route)
- Technical Analytical Chemistry Research Group of the Hungarian Academy of Sciences, Participant (2012-2017, ca. 500000 EUR funding from Hungarian Academy of Sciences)
- Bilateral Polish-Hungarian Research and Technology program, Participant (2012-2013, ca. 9000 EUR funding from National Development Agency, Hungary, Nr. TÉT_10-1-2011-0045, Core/shell nanofiber gas sensors based on semiconductor oxides)
- János Bolyai Fellowship of the Hungarian Academy of Sciences, Principal investigator (2011-2014, ca. 16000 EUR funding from Hungarian Academy of Sciences, Core/shell metal oxide gas sensors and photocatalyst prepared by atomic layer deposition)
- Marie Curie Intra-European Fellowship, Principal investigator (2010-2012, ca. 180000 EUR funding from EU FP7 Marie Curie Actions, Nr. 235655, Preparing complex nanostructures by atomic layer deposition)
- Materials Structure and Modeling Research Group of the Hungarian Academy of Sciences, Participant (2007-2011, ca. 400 000 EUR funding from Hungarian Academy of Sciences)
- Bilateral Finnish-Hungarian Research and Technology program, Participant (2004-2006, ca. 7000 EUR funding from National Development Agency, Hungary, Nr. OMFB-00791/2005, Preparing thin films for modern applications by ALD and CSP)
- Lipót Aschner Scholarship (2002-2004, ca. 10000 EUR funding from General Electric Hungary, Improving the production of tungsten for light source industry)
- R&D work for industrial partners (e.g. General Electric, Bosch, GlaxoSmithKline, Richter Gedeon, Samsung, Sanofi, Temic, Teva, Unicum, various SMEs in Hungary) (2005-, ca. 40000 EUR)

Used techniques:

- XRD, XRR, SEM-EDX, XPS, ¹H-MAS NMR, FTIR, Raman, UV-VIS, PL, TG/DTA, TG/DTA-MS, TG-FTIR, DSC, ALD, titrimetry, gas sensing, SERS, electrochromic, catalysis and photocatalytic tests

Academic and industrial partners:

- Georgi Nadjakov Institute of Solid State Physics, Bulgarian Academy of Sciences (Sofia, Bulgaria); Technical University of Tallinn (Estonia); Laboratory of Inorganic Chemistry, University of Helsinki (Finland); Department of Physics, University of Jyväskylä (Finland); Laboratory of Inorganic Chemistry, Helsinki University of Technology (Finland); Microelectronics and Materials Physics Laboratories, University of Oulu (Finland); Department of Inorganic Chemistry, AGH University (Krakow, Poland); Nicolaus Copernicus University (Torun, Poland); Universidade Nova de Lisboa (Portugal); Babes-Bolyai University (Cluj-

Kolozsvár, Romania); “Ilie Murgulecsu” Institute of Physical Chemistry of the Romanian Academy, Materials Science Department (Bucharest, Romania); St. Petersburg State University (Russia); University of Edinburgh (Scotland); University of Novi Sad (Újvidék – Novi Sad, Serbia); Department of Electronic, Electric and Automatic Engineering, URV University (Tarragona, Spain); Department of Materials Science and Engineering, SUNY (NY, USA); Pannon University (Veszprém, Hungary); University of Szeged (Hungary); Institute of Materials and Environmental Chemistry and Institute of Technical Physics and Materials Science at the Research Centre for Natural Sciences, Hungarian Academy of Sciences (Hungary); Department of Electronic Devices, Department of Electronic Technology, Department of Organic Chemistry and Technology, Department of Materials Science and Physical Chemistry, Department of Atomic Physics, Budapest University of Technology and Economics (Hungary)

- Bosch, General Electric, GlaxoSmithKline, Lighttec, Lindab, Richter Gedeon, Samsung, Sanofi, Temic, Teva, Unicum, various SMEs in Hungary, etc.

Teaching activity

- Supervising: Postdoc (2), PhD students (1 defended, 1 absolved, 4 graduate, 1 consultant supervising, 1 co-supervising), MSc student (14), BSc students (14); Volunteer student research work (TDK) (15), from which the obtained prizes at BME: I (3), II (4), III (5), national final (OTDK) prizes: II (1), III (2)
- Teaching activities both in English and Hungarian (giving lectures, calculation and laboratory practices, examinations) in the courses (2002-): Materials Science Analysis Methods (Eng), Analytical Chemistry Laboratory Practice (Eng), Analytical Chemistry I-II-III (Hun), Environmental Analytical Chemistry (Hun), Analytical Chemistry Laboratory (Hun), General Chemistry Laboratory (Hun), Technical Chemistry I-II (Hun), Materials Science Analysis Methods (Hun), Calculations in General Chemistry (Hun); Analytical and structure elucidation methods (Hun), Great invention of the XX century (Hun), Student teacher (Demonstrator)
- Head of course and preparing course curriculum: Analytical and structure elucidation methods (Hun), Materials Science Analysis Methods (Eng), Analytical Chemistry Laboratory Practice (Eng), Analytical Chemistry I-II-III (Hun)