

## Curriculum vitae

### Personal data

Name: Prof. emeritus Dr. István SZÚCS

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### Employments at the University of Miskolc

1970-1978 assistant  
1978-1984 senior lecturer  
1984-2005 university lecturer (docent)  
2005-2016 professor  
2016- professor emeritus

#### Leading posts

1995 dean of Metallurgical Faculty  
1996-2004 director of Institute of Energetics and Silicate Engineering  
1999-2002 head of Department of Combustion Technique  
2006-2010 pro-rector of educational affairs, University of Miskolc

### Scientific degree

1982 candidate of technical sciences (Hungarian Academy of Sciences, TMB No 9624)  
1997 Ph.D. 89/1997 (University of Miskolc)  
2005 university habilitation (No 92/2005, University of Miskolc)

### Scientific activities

combustion technique  
biomass burning  
combustion technique of hazardous waste materials  
thermal utilisation of waste materials  
air cleaning processes  
decrease of emission of solid air pollutants  
transmission processes of air pollutants  
boilers, high temperature equipments  
furnace of metallurgical, chemical and silicate industry  
utilisation parameters of refractory materials  
wearing processes of refractory lining of high temperature equipment

### Professional experiences abroad

1974-1978 scientific researcher (aspirant to candidate's degree) in Moscow Institute of Steel and Alloys  
July, 1982 1 month industrial study in Zaporozhstal Ironworks  
October, 1985 two weeks research work in Technical University of Ostrava (Vysoka Škola Baňska, on theme: decrease of brown fume formation in oxygen converters)  
July, 1986 1 month industrial study in Novolipetsk Ironworks  
june, 1991 3 weeks industrial study in Easter Slovakian Ironworks (Wyhodoslovenky Zhelezarny) in Košice, on theme: refractory lining of coke-oven  
march, 2008 one week in research center "Salut" in Moscow, on theme: thermal utilization of biomass

#### Visiting professor abroad universities

January, 1995 two weeks lecturer in Academy of Mining and Metallurgy TU Freiberg, Faculty of Machinery (Themes: Air cleaning; Mathematical modelling of transmission processes of air pollutants)  
September, 1995 two weeks lecturer in Technical University of Ostrava (Vysoka Škola Baňska, on theme: Increase of mechanical strength of refractory concretes)  
October, 1999 two weeks lecturer TU Košice, Metallurgical faculty, on theme: Mathematical modelling of transmission processes of air pollutants

may, 2002 two weeks lecturer in TU Katowice, on theme: increase of efficiency of metallurgical furnaces

### Membership

1980-1990 secretary of Metallurgical Committee of Hungarian Scientific Academy  
1990-2002 member of Automation Committee of Hungarian Technical and Natural Scientific Association  
1997-2000 member of Environmental Protection Committee in Miskolc of Hungarian Scientific Academy  
1998-2011 member of Scientific Association of Machine Engineers  
2000- member of International Flame Research Foundation (IFRF)  
2000- expert of Grant Agency of Czech Republic (GACR)  
2000-2003. member of Hungarian Committee of World Energy Council (WEC)  
2004- member of Hungarian Section of Combustion Institute (HSCI)  
2005- editor of energetical section of Journal Building Materials  
2006-2008 president of Technical Committee of Hungarian Rector's Conference  
2010- member of Metallurgical Committee of Hungarian Scientific Academy

### Published reports

Books and passages in books	15
Printed publications	257
Co-author of hungarian patents	21
Co-author of international patents	2
Conference lectures	184

### The most relevant publications

- V. Zs. Baranyai, F. Kristály, I. Szűcs: Low temperature rehydration of thermally dehydroxylated Bayer–gibbsite, evolution and transformation of phases, *Journal of Thermal Analysis and Calorimetry*, (2017) Volume 129, Number 3, pp: 1353-1365, ISSN 1388-6150
- Baranyai V. Z., Kristály F., Szűcs I.: Influence of grain and crystallite size on the gibbsite to boehmite thermal transformation. *Studia UBB Chemia*, LX 2. 2015, 60(2), Tom 1, pp: 27-44, ISSN 1224 7154
- T. Koós, I. Szűcs, L. Gyulai: Computer Simulation of the Heating Process of Fused Cast Refractory Blocks. *MATERIALS SCIENCE AND ENGINEERING, PUBLICATION OF THE UNIVERSITY OF MISKOLC*, Vol. 39, No. 2, Miskolc University Press, 2014, pp: 23-32, ISSN 2063-6792
- I. Szűcs, T. Koós, J. Tóth: Determination of the gas Permeability of hydraulic bonded refractory concrete. *MATERIALS SCIENCE AND ENGINEERING, Publication Of The University of Miskolc*, Volume 39, No. 1, 2014, pp: 59-67, HU ISSN 2063-6792
- Baranyai V. Z., Kristály F., Szűcs I.: Influence of the short time grinding on the thermal decomposiption processes of gibbsite produced by the Bayer process, *MATERIALS SCIENCE AND ENGINEERING, PUBLICATION ON THE UNIVERSITY OF MISKOLC*, 2014, 38(1), pp: 15-27, HU ISSN 2063-6792
- I. Szűcs, T. Koós, L. Gyulai: Characteristics of the Refractory Concrete Used for Seal of Solidification Cavity of the Electrocast Refractories, 13th *Hutní keramika*, Czech Republic, 19-20 September, 2013, Proceedings, pp: 20-27
- Póliska Cs., Szűcs I., Koós T., Erdélyi J.: Conversion of the district heating system of a small village from fossil fuels to biomass, *Proceedings oft he 20th European Biomass Conference and Exhibition*, 2012, p. 6, pp: 1299-1304, ISBN: 978-88-89407-54-7
- Nagy S., Mádainé Üveges V., Boros É., Szűcs I.: Investigation of the Solid Waste of a Small Town for the Production of RDF, *Geosciences and Engineering: Publication of The University of Miskolc* (1), pp: 247-254, 2012, ISSN 2063-6997
- A. Nemes, Á.B. Palotás, I. Szűcs, G. Nagy, Zs. Dobó: Potential solution for venting urban contaminated air, *XXVI. microCAD International Scientific Conference, Section N: Fluid and Heat Engineering, Paper A16*. p. 6, University of Miskolc, 29-30 March, 2012, ISBN:978-963-661-773-8

- Szemmelveisz, K., Szűcs, I., Palotás, A. B., Winkler, L., Eddings, E. G.: Examination of the combustion conditions of herbaceous biomass, *Fuel Processing Technology*, 90 (June, 2009), pp: 839-847, ISSN 0378 - 3820
- Szűcs, K. Szemmelveisz, Á. B. Palotás, L. Winkler: Analysis of alternative fuels for power plant usage, 16th European Biomass Conference and Exhibition, Biomass for Energy, Industry and Climate Protection, Valencia, Spain, 2008, pp: 1-5
- K. Szemmelveisz, I. Szűcs, B. Palotás, L. Winkler and K. Valler: Ligneous, herbaceous biomass fuels and wastes problems at biomass combustion, 8th International Conference on Heat Engines and Environmental Protection, Balatonfüred, Hungary, 2007, pp: 63-68
- Szemmelveisz, I. Szűcs, Á. B. Palotás, L. Winkler: Determination of the Combustion Conditions and Slag Characteristics of Herbaceous Biomass in Electric Power Generation, 15th European Biomass Conference & Exhibition, From Research to Market Development, Berlin, Germany, 2007, Proceedings, pp: 1-4
- Szemmelveisz, I. Szűcs, Á. B. Palotás, L. Winkler: Biomass Co-firing Issues in Power Plants, Third European Combustion Meeting, 2007., Chania, Crete, Greece, 2007, Proceedings, pp: 1-6
- E. Cserta, I. Szűcs, Gy. Sugár: Questions of Air-pollution Control of Biomass Fired Boiler of Electric Power Plant, microCAD 2005 International Scientific Conference, Section E-G: Energy and Fluid Engineering, University of Miskolc, 2005, pp: 1-6, ISBN 963 661 646 9
- Fülöp, I. Szűcs, J. Aranyos: Optimalizierung der Feuerungstechnischen Parameter in dem Grossdruckdampfkessel, microCAD 2005, International Scientific Conference, University of Miskolc, 10-11 March, 2005, pp: 13-18, ISBN 963 661 646 9
- Horváth, Z. Polányi, I. Szűcs: Heizregulierung der Heizkanäle in der Kokerei, microCAD 2005 International Scientific Conference, University of Miskolc, 10-11 March, 2005, pp: 19-22, ISBN 963 661 646 9
- K. Szemmelveisz, I. Szűcs, J. Mikó, Á. Wopera: Problems at Biomass Combustion, 7th International Conference on Heat Engines and Environmental Protection, Balatonfüred, May 23-25, 2005, pp: 153-159, ISBN 963 420 840 1
- I. Szűcs, Á. B. Palotás, N. Hegman, I. Réz, M. Barth, L. Papp: Diagnostic Method for the Determination of Refractory Lining Thickness of High Temperature Equipment, *Materials Science Forum* Vol. 414-415 (2003) pp: 329-336., 2003 Trans. Tech. Publications, Switzerland, ISSN 1662 - 9752
- Ovčačík F., Szűcs I., Hašek P.: Resistance of Refractory Castables at Thermal Shock, *Metal* 2003, 12th International Metallurgical and Materials Conference, Proceedings, pp: 1-6, Czech Metallurgical Society, 2003, Paper no 169. ISBN 80-85988-82-8
- I. Szűcs, Dr. habil. B. Csőke, K. Szemmelveisz: Elimination of Municipal Waste for Energetical Purposes, CERECO '2003 4th International Conference on Carpathian Euroregion Ecology, University of Miskolc, April, 28-30, 2003, Proceedings, pp: 170-177, ISBN 963 661 598 5
- Fi. Ovčačík, I. Szűcs, P. Hasek: Development of Refractory Castable for lining of fluidized boiler, (Odolnost zárobetonových vyzdívek pri provozu fluidního kotle), *Metal* 2003, 12th International Metallurgical and Materials Conference, Proceedings, pp: 1-6, ISBN 80-85988-82-8
- Hašek P., Ovčačík F., Szűcs I.: Resistance of castable lining at running fluidized-bed boiler, *Acta Metallurgica Slovaca*, 4/2002, pp: 48-53, ISSN 1335-1532
- I. Szűcs, T. Szemmelveisz, Á. Wopera, I. Simon, I. Máté: Air pollution effect of a brown coal fired power plant, *Acta Mechanica Slovaca*, 2/2002, pp: 213-220, ISSN 1335-2393
- K. Szemmelveisz, I. Szűcs, J. Mikó: Reduction of the investment and operational costs at the continuously working furnace by optimalization of their wall structure, *II. Industrial Furnaces and Refractory Materials*, Proceedings, Kosice Hutnicka fakulta TU, 2002, pp: 50-56, ISBN80-968743-0-6
- Palotás Á. B., Szűcs I., Hegman N.: Investigation and mathematical modeling of a furnace wall deterioration, *Freiberger Forschungshefte*, A 865, Energie 2001, pp: 75-84, ISBN: 3-86012-146-4
- I. Szűcs, Á. B. Palotás, N. Hegman, J. Mikó, R. Zubács: Method for the determination of dangerously thinned areas of a steel plant mixer furnace lining, *Metal* 2001, 10th International Metallurgical and Materials Conference, Symposium A, Session 3, No. 222/32, pp: 1-8, ISBN 80-85988-56-9

- J. Mikó, Á. Wopera, I. Szűcs, K. Szemmelveisz: Staged Firing of Biomass, Acta Mechanica Slovaca, Košice, 3/2001, pp: 305-312, ISSN 1335-2393
- Szűcs, J. Mikó, K. Szemmelveiszné, A. Eszenyi: Improvement of operatin conditions of gas-oxygen heated copper melting furnace, Metal 2001, 10th International, Metallurgical and Materials Conference, Symposium E, Session 4, No. 223/64, pp: 1-8, ISBN 80-85988-56-9
- J. Mikó, Á. Wopera, I. Szűcs, G. Nagy: Energetische Nutzung der Biomasse, Acta Mechanica Slovaca Košice, 3/2000, pp: 401-408, ISSN 1335-23-93
- G. Nagy, I. Szűcs, Á. Wopera: Environment-Friendly Biomass-Burning Equipment, Tile and Brick International, Volume 16, No. 5, October, 2000, pp: 338-341, ISSN 0938-9806
- Szűcs, T. Szemmelveisz, I. Máté: Calculation method of the air pollutants concentration caused by mineral oil collecting station, CERECO2000 3rd International Conference on Carpathian Euroregion Ecology, Lillafüred, May 21-24, 2000, Proceedings, pp: 216-223, ISBN 963 661 4067
- I. Szűcs, Á. B. Palotás, N. Hegman, J. Mikó: Inverstigation of the Refractory Lining Wearing Process of a Steel Plant Mixer Furnace, I'st International Conference on Industrial Furnaces and Refractory Materials, November, 2000, pp: 110-114, ISBN 80-232-0191-3
- Szűcs I., Mikó J., Réz I., Szemmelveisz K.: Research of Refractory Lining Insulated with Super Light Concrete, Freiburger Forschungshefte, A 851, Silikattechnik, pp: 168-174, TU Bergakademie Freiberg
- Szűcs I., Heizer M.: Untersuchungen der Ursache des Versagens von Feuerfestbaustoffen in Abfallverbrennungsanlagen, Freiburger Forschungshefte, A 848 Maschinenbau pp: 38-45, TU Bergakademie, Freiberg, 1998, ISBN: 3-86012-074-3
- Á. Wopera, I. Szűcs: NO<sub>x</sub>-Reduction by Combustion Methods, The First Asia Pacific Conference on Combustion, pp: 121-124, Japan, Uversity of Osaka, 12-15 May, 1997
- Á. Wopera, I. Szűcs: Staged Firing of Natural Gas with Flue Gas Recirkulation, Japanese Flame Days '97, IFRC 20th Anniversary, pp: 1-12, Japan, Osaka, 16-17 May, 1997
- Mikó J., Szűcs I.: The optimalisation of furnace for burning of lime, Publications of the Unuversity of Miskolc, 1995, Series B Metallurgy, Volume 38, pp: 31-42
- Szűcs I., Szemmelveisz T., Csicsely T.: Verzögerungsfrei Messung der Temperaturverteilung mit Thermoelementen bei hohen Temperaturen, Energietechnik Vol. 35, 1985, No. 9, pp: 339-342
- I. Szűcs, J. Mikó, G. Nagy: Untersuchungen zur Standfähigkeit der feuerfesten Auskleidung in einem Schachtofen zur Wärmebehandlung von SiO<sub>2</sub> -reichem Einsatzgut, Energieanwendung, Vol. 34, 1985. 2, pp: 60-62
- Mikó J., Filimonov Ju., Szűcs I.: Sovershensztvovanie staleplavilnogo processa putjom primenenija gazokislorodnoj produkci vanny, Izvestija VUZ-ov Chernaja Metallurgija, Moskva, 1984. No. 1, pp: 132-136, ISSN 0368-0797