

PROF. DR. GÁBOR SZABÓ MSc. CSc. DSc.



Workplace: University of Szeged, Faculty of Engineering, Department of Technical and Process Engineering (1976-), University of Szeged (2000-).
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Undergraduate studies: Moscow State University of Food Production, Budapest University of Technology and Economics.

Certificates: Moscow State University of Food Production, Certificate: Mechanical Engineer (1976), Budapest University of Technology and Economics, Certificate: Qualified Mechanical Economic Engineer (1982), doctoral degree in horticulture (1983), Candidate of Technical Sciences (1988), Habilitated Doctor (1998), Doctor of the Hungarian Academy of Sciences (2007).

Knowledge of foreign languages: Russian, English

Academic positions: Department Head (1989-); Deputy Director-general for Education (1989-1993); Deputy Director-general for Scientific Affairs (1993-1996); Faculty Director-general (1996-2003); Acting Leader of the Committee for Developing Technical Training, University of Szeged (2000-2003); Acting Leader of the Committee for Organizing Support, University of Szeged (2000-2003); Chairman of the Agricultural Centre of the Southern Great Plain, University of Szeged (2000-2003); Vice-rector for Economic and Public Relations, University of Szeged (2000-2003); Member of the University Council, University of Szeged (2000-2003); Rector-President of the University of Szeged (2003-2010).

Scientific positions: President of the Technical Committee of the Regional Committee in Szeged, Hungarian Academy of Sciences (1999-2003); President of the Committee for Food Engineering and Operation Science, Technical Committee of the Regional Committee in Szeged, Hungarian Academy of Sciences (1997-2003); Member of the Committee on Agricultural Engineering, Section of Agricultural Sciences, Hungarian Academy of Sciences (from 2001); Complex Committee on Chemical and Processing Engineering, Section of Chemical Sciences, Hungarian Academy of Sciences (from 2002); Member of the Agricultural Council, Hungarian Scholarship Board (1999-2004); Honorable Member of the Scientific Council of I. I. Mechnikov Odessa National University (2005), Honorary Professor of the Moscow State University of Food Production (2006), Doctor Honoris Causa of the University of Oradea (2009).

Scientific commissions: University of Horticulture and Food Industry, Doctoral University Council, Member of the Committee for Food Engineering and Economics (1995-2000); Faculty of Mechanical Engineering, Szent István University, Foundations

of Agricultural Engineering Ph.D. Program, Graduate School of Engineering, External Foundation Member (from 2000-); University of West Hungary, Faculty of Agriculture, Mosonmagyaróvár Doctoral Council and Habilitation Committee. External Member (from 2001); University of Kaposvár, Research Institute of Technical Chemistry, Member of the Scientific Council (2000-2003).

Membership in the editorial boards of national periodicals: Publications of the University of Horticulture and Food Industry, Publicationes Universitatis Horticulturae Industriaeque Alimentariae, Member of the Editorial Board (1997-2003); Hungarian Dairy Journal, Science and Practice, Counselling Member of the Editorial Board (1994-2003).

Membership in the organization committees of scientific conferences: HUN-Pra-PARTEC International Conference on Practical Aspects of Particle Technology. Budapest (Hungary) 21-24th August, 2001.; 4th Hungarian Drying Symposium, Mosonmagyaróvár, 18-19th October, 2001.; The 4th International Conference for Conveying and Handling of Particulate Solids. Budapest (Hungary) 27-30th May, 2003.; 5th Hungarian Drying Symposium, Szeged, 2003.

Main applications of research:

1. **Szabó, G. (1995-1997):** Examining Impulse, Heat and Component Transport Processes in Combined (Vibro-aero-fluidization, Convection, Microwave) Energy Transfer Field. *National Scientific Research Foundation (OTKA), Research Report OTKA T 017714. Duration of the application: 28th February, 1995.- 31st December, 1997.*
2. **Szabó, G.(1996-1997):** Improving the Industrial-Practical Educational Basis of Training Food Industry Engineers and Professional Managers. Strengthening the Relationship Between Education and Economy. *Research Report. PHARE Program HU-94.05.*
3. **Szabó, G. (1997-2000):** Developing a Practical Educational Basis for Food Industry Engineers and Professional Managers. *Phare HU-94.05.0101-L001/06.*
4. **Szabó, G., Kovács, E.(1995-1996):** Microwave Treatment of Grain Legumes for Better Quality of Products. *National Technical Development Board, Hungarian-Spanish Inter-governmental Scientific and Technological Cooperation. Tét 4.*
5. **Szabó, G. (1997-1999):** Examining and Improving Production Operations and Qualifying Methods of Food Products. *FKFP 1032/1997-1999.*
6. **Szabó, G. et al., (2000-2002):** Applying Microwave Treatment in the Quick Exploration of the Ergosterin Content of Microspores to Assess the Fungal Contamination of Cereals. *FKFP 0261/2000.*
7. **Szabó, G., Fenyvessy, J. (2000-2001):** Expanding the Variety of Cheese Curd Products for Consumption by Applying New Methods of Processing, Conservation and Quality Assurance. *OM 53/200.*
8. **Szabó, G. et al. (2001-2003):** Developing an Integrated Technological System for the Environment Friendly Utilization of Renewable Energy Sources

(INTER-MEGENERG). University of Szeged *Széchenyi Plan National Research&Development Programme*

9. **Szabó, G.** et al. (2002-2004): Determining the Heat-physical Parameters of Products of Agricultural Origin by New Methods of Measurement and Assessment During Conductive, Convective and Microwave Heat Treatment. *OTKA application T 037480.*
10. **Szabó G.** et al. (2002-2005): Community Vocational Training Action „*Bios & Environment Transnational Network*” *LEONARDO DA VINCI Project. Programme. Second Phase: 2002-2005.*
11. **Szabó, G.** et al. (2005-2008): Regional University Knowledge Centre for Environmental and Nanotechnology: Developing Integrated Systems to Improve the Quality of Life of the Southern Great Plain Region. *NKTH application.*

Board and social commissions: Honorary Member of the Csongrád County Engineering Chamber (from 2004); Plenary Member of the Higher Education Scientific Council (FTT) (1998-2000); Member of the FTT Financing Committee (1999-2000); Member of the Foundation for Szeged Scientific Advisory Board (1999-2003). Member of the Progress Foundation Advisory Board (1996-2003); President of the Supervisory Board of the UNICOTEC Universitas Cooperational Research and Technology Transfer Centre Commercial and Credit Company (2002-2003); Founding Member of the Rotary Club, Szeged (1990-2005); Member of the I. Szeged Lions Club (from 2005), Presidency Member of the Kayak-Canoe Section of DÉMÁSZ (South Hungarian Electric Supply Privately Operating Limited Company) (2006-), President of the Hungarian Scientific Society for Food Industry (2008-), President of the University Section of the Hungarian Rectors' Conference (2007-2009), President of the Hungarian Rectors' Conference (2009-), Council Member of European University Association (2009-), Consultative Member of the Governing Board of the Hungarian Academy of Sciences (2009-), Member of the Research and Science Policy Council (2009-), Member of the Research and Technology Innovation Council (2009-), Representativ of Doctors in Section of Agricultural Sciences of the Hungarian Academy of Sciences (2010-), Member of the Hungarian Academy of Engineering (2010-).

Study trips abroad:

- Institute de Fermentaciones Industriales. Instituto Superior de Investigaciones Cientificas, Spain (between 1998 and 2000, 1 month) „*Microwave Treatment of Grain Legumes for Better Quality of Products*” (Senior Scientist).
- Lincoln University Campus Great Grimsby UK, Food Research Centre (between 1999 and 2002, 1 month) “*Optimising concentration of fruit juices using membrane processes including novel membrane techniques*”.(Senior Scientist)
- „*Bios & Environment Transnational Network*” Project co-ordinator *LEONARDO DA VINCI Project. Community Vocational Training Action Programme. Second Phase: 2002-2005.* Greece (Athens) (2002.).

- Leuven University, Belgium. EUA /European University Association/ Workshop I. *Governance and Leadership: Developing New Policies and Skills*. (2003).
- Dublin University, Ireland. EUA Workshop II. *Managing the University Community*. (2004).

Honours: Schoolbook Niveau Prize (*Food Industrial Processes and Equipments*, 1996); Széchenyi Scholarship for Professors (1998-2002); Academy Prize, Presidium of the Hungarian Academy of Sciences (2001); Schoolbook Niveau Price (*Technical Thermodynamics for Engineers* 2002); Universidad Ricardo Palma, Lima, Peru. Professional recognition of the results achieved in the fields of microwave research and teaching thermodynamics as well as the scientific work carried out in the field of food engineering (2004); Commemorative Plaque for the Hungarian Higher Education (2004); Middle Cross of the Order of Merit of the Republic of Hungary (2005), FAO World Food Day Silver Medal (2007).

Fields of research: Vibro-aero fluidizational drying, agglomeration, instantization. Hybride (convective-microwave) energy transfer material treatment. Theory and practice of microwave heat transfer. Microwave extraction. Examining processes of heat, material and impulse transport in food industry operations, procedures. Production and storage by methods of cooling and freezing. Energy management.

Author and co-author more than 210 papers in major scientific journals, books, refereed congress contributions, in addition co-author of 4 textbooks and presented results at a number of international conferences. Number of distributed university notes: **7**. Number of patents: **3**.

Main publications (1997-2009)

1. R. Rajkó, **G. Szabó**, C.Vidal-Valverde, E. Kovács (1997): Designed Experiments for Reducing Antinutritive Agents in Soybean by Microwave Energy. *J.Agric. Food Chem.* 45. pp. 3565–3569.
2. **G. Szabó**, R. Rajkó, C. Hodúr (1998): Combined Energy Transfer by Microwave-Convective Drying of Agriculture Materials. *Hung. Agric. Eng. Vol. 11.* 23-25.
3. **Szabó, G.**, Rajkó, R., Kovács, E., Vidal-Valverde C. (1998): Optimisation of Microwave Treatment for Reducing Enzyme Activity of Soybean. In "Proceedings of the international symposium on applications of modelling as an innovative technology in the agri-food chain" 29 November - 2 December, Wageningen, The Netherlands., Edited by: L.M.M. Tijskens., M.L.A.T.M. Hertog. Published by ISHS, Leiden, The Netherlands.(ISBN 90 6605 940 0) *Acta Horticulture, Volume, 476, pp. 141-149.*
4. **G. Szabó**, R. Rajkó, R., C. Hodúr (1998):Agglomeration-Drying by Microwave. *Bulletins for Applied Computer Mathematics. BAM – 1532/'98 – LXXXVI –A p. 215-223.*

5. **G. Szabó., K. Rigó (2000):** Agglomeration-Drying of Food Powders by Combined Microwave/Conventional Energy Transfer in Vibro-Fluid Layer. *3rd Israeli Conference for Conveying and Handling of Particulate Solids. The Dead Sea, Israel. May 29-June 1, 2000. Proceedings Volume 1. 2.20-2.28 pp.*
6. **Szabó, G. (2001):** Theoretical and Experimental Study of Agglomeration-Ddrying of Food Powders in Vibro-Fludized Bed by Microwave-Convection Method. *Internetenional Conference on Partical Aspects of Particle Technology. HUN-Pra-PARTEC. Budapest, 21-24 August. Proceedings pp. 343-346.*
7. **K. Rigó., G. Szabó, J. Téren, J. Varga (2001):** Application of Microwave-Assisted Ergosterol Extraction (MAE) Method to Assess Fungal Contamination in Plant Products. *EUROFOODCHEM XI. Norwich Research Park. Biologically-Active Phytochemicals in Food. Edited by: W. Pfannhauser, G.R. Fenwick & S. Khokhar (ISBN 0-85404-806-5) pp. 253-255.*
8. **Szabó, G., Rajkó, R., Neményi, M., Hodúr, C. (2002):** Modelling of Combined Hot-air Convective and Microwave Drying of Mushroom (*Agaricus Bisporus*). *International Drying Symposium. IDS'2002. Beijing, August 27-30. China. Drying 2002. Edited by: C.W. Cao., Y.K. Pan., X.D. Liu., Y.X. Qu. Series Editor: A.S. Mujumdar. Volume A pp. 319-326.*
9. **G. Szabó., L. Ludányi., R. Rajkó., E. Forgacs. (2003):** Recent Developments of Combined Microwave-assisted Hot-Air Vibrfluidised Bed Dryer with Homogenius Distribution of Electromagnetic Field. *4th International Conference for Conveying and Handling of Particulate Solids. 2. pp. 13.31-13.36.*
10. **F. Eszes, R. Rajkó, G. Szabó (2005):** Determination of thermal parameters under industrial conditions. *Hungarian Agricultural Engineering. N^o 18/2005. pp. 26-28.*
11. **J., Fenyvessy, G. Szabó (2005):** Increasing the duration of products with microwave heat-treatment. *6th International Multidisciplinary Conference. North University of Baia Mare, 2005. May 27-28. Vol. 1. pp.183-188.*
12. **R. Rajkó, F. Eszes, G. Szabó (2006):** Rapid method for moisture content determination of foods using microwave treatment. *15th International Drying Symposium (IDS 2006). Budapest, Hungary, 20-23 August 2006. CD-ROM. Edited by I. Farkas. Series Editor A.S. Mujumdar*
13. **Eszes, F., Rajkó, R., Szabó, G. (2006):** Comparison of heat treatment calculations using thermal diffusivity determined from chemical compositions. *CHISA Congress Prága. 17th International Congress of Chemical and Process Engineering 27-31 August 2006. Prága. Summaries 5. Systems and Technology. pp. 1556-1557.*

14. **Szabó, G.,** Beszédes, S. (2006): Dielektromos jellemzők vizsgálata szemeskukorica mikrohullámú szárítása során. VII. Nemzetközi Élelmiszertudományi Konferencia. SZTE SZÉF Szeged, 2006. április 20-21. CD-ROM. ISBN 963 482 676 8
15. **Szabó, G.,** Beszédes, S. (2006): Kombinált energiaközléses műveletek alkalmazása élelmiszerek minőségjavítására. XXXI. Óvári Tudományos Napok. Mosonmagyaróvár, 2006. október 05. CD ROM ISSN 0237-9902
16. S. Beszédes, Zs. László, C. Hodúr, **G. Szabó** (2007): Microwave extraction of pectin from red currant. *Proceedings of 5th International Congress on Food Technology Thessaloniki, 2007. March 9-11 Vol III. p:436-440 ISBN: 978-960-88557-4-8*
17. S. Beszédes, Zs. László, Sz. Kertész, **G. Szabó,** C. Hodúr (2008): Increasing the soluble organic matter content and biogas product of sewage sludge by microwave pretreatment. *Hungarian Agricultural Engineering. N^o 21/2008. pp. 27-29.*
18. S. Beszédes, Sz. Kertész, Zs. László, **G. Szabó,** C. Hodúr (2008): Biogas production of ozone and/or microwave-pretreated canned maize production sludge. *Ozone Science & Engineering Journal Vol 31 1-6.*
19. S. Beszédes, Sz. Kertész, Zs. László, **G. Szabó,** C. Hodúr (2008): Enhancement biogas production of canned maize production sludge by ozone and microwave pretreatments. *Proceedings of the Xth. International Symposium of Young People and Multidisciplinary research. Timisoara, 13-14 November 2008. pp.:69-75. (ISSN 1843-6609).*
20. S. Beszédes, A. Kósa, Zs. László, **G. Szabó,** C. Hodúr (2009): Examination of the effect of microwave treatment on influential parameters of biogas production from sludge. Abstract. *Book of Synergy and Technical Development (Synergy2009) Gödöllő, Hungary, 30. August 30- September 03, 2009. p.:93 (ISBN 978-963-269-111-4)*
21. J. Sárosi, J. Gyeviki, T. Endrődy, **G. Szabó,** P. Szendrő (2009): Characteristics of the Pneumatic Artificial Muscles. *Synergy and Technical Development (Synergy2009) Gödöllő, Hungary, 30. August 30- September 03, 2009. CD ROM (full article) (ISBN 978-963-269-112-1).*

Szeged, 1st of July 2010.