

curriculum vitae



Personal information

Surname(s) / First name **Réka BARABÁS (born FÁBIÁN)**
E-mail(s) reka.barabas@ubbcluj.ro

Occupational field **Assoc. Professor**

Work experience

Dates	04.01.2006-present
Occupation or position held	Associate professor (since 2016), since December 2014 vice-dean
Main activities and responsibilities	Education and research in: Bioceramics, Transport phenomena, Nanomaterials; Administration: responsible for Hungarian Line of Study in frame of the Faculty of Chemistry and Chemical Engineering
Name and address of employer	University Babes-Bolyai Cluj- Napoca (Romania), Department of Chemical Engineering and Oxide Materials Science
Type of business or sector	University

Dates	01.03.2005-31.10.2005
Occupation or position held	Scientific assistant
Main activities and responsibilities	Nanopowders in MgO-C Refractories (direction of DFG- Project)

Name and address of employer	Freiberg University of Mining and Technology (Germany), Department of Ceramic Engineering
Type of business or sector	University
Dates	01.03.2004-28.02.2005
Occupation or position held	Scholarship for postdoctoral lecture qualification
Main activities and responsibilities	Thermal Spraying (setting into operation of the MASTER JET type flame spray gun); Geopolymers/Biocermics
Name and address of employer	Freiberg University of Mining and Technology (Germany), Department of Ceramic Engineering
Type of business or sector	University
Dates	01.10.2000-30.09.2002
Occupation or position held	Postdoctoral scholarship
Main activities and responsibilities	Characterization of biofilter materials, Direction of heat transfer laboratories
Name and address of employer	Freiberg University of Mining and Technology (Germany), Institute of Thermal Process Engineering
Type of business or sector	University
Type of business or sector	University
Dates	01.11.1999-30.09.2000
Occupation or position held	Scientific assistant
Main activities and responsibilities	Materials of fuel cells
Name and address of employer	Freiberg University of Mining and Technology (Germany), Institute of Ceramic Materials
Type of business or sector	University
Dates	01.09.1997-30.04.1998

Occupation or position held	Scientific assistant
Main activities and responsibilities	Direction of medical certification for preparation of hydroxyapatite powders
Name and address of employer	University of Veszprém (Hungary), Department of Silicate and Materials Engineering
Type of business or sector	University

Education and training

Dates	28.12.2022
Title of qualification awarded	Habilitation, Chemical engineering
Principal subjects/Occupational skills covered	Bioceramics
Name and type of organisation providing organisation and training	Babes-Bolyai University, Cluj-Napoca
Dates	1994-1997
Title of qualification awarded	PhD in Chemistry
Principal subjects/Occupational skills covered	Bioceramics
Name and type of organisation providing organisation and training	University of Veszprém (Hungary)
Level in national or international classification	International Standard Classification of Education (ISCED) 6
Dates	1989-1994

Title of qualification awarded
 Chemical Engineer

Principal subjects/Occupational skills covered
 Chemical Engineering

Name and type of organisation providing organisation and training
 Technical University of Timisoara, Faculty of Industrial Chemistry, Department of Science and Engineering of Oxidic Materials, Romania

Level in national or international classification
 ISCDE 5

Dates
 1985-1989

Title of qualification awarded
 Final secondary-school examination

Principal subjects/Occupational skills covered
 General education

Name and type of organisation providing organisation and training
 Chemical High School, Tg. Mures (Romania)

Level in national or international classification
 ISCED 3

Personal skills and competences

Mother tongue(s) **Hungarian**

Self-assessment

Understanding	Speaking	Writing
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European level (*)

	Listening	Reading	Spoken interaction	Spoken production	
Romanian	C2	C2	C2	C2	C2
English	C1	C1	C1	C1	C1
German	C2	C2	C2	C2	C2
French	B1	B1	B1	B1	B1

(*) Common European Framework of Reference (CEF) level

Social skills and competences

Capacity of work in international and national research teams, interpersonal skills, communication, responsibility, intercultural skills, conflict management, negotiations

Former Board member of TransSilvanus Association

Organisational skills and competences

Vaste national and international managerial competence, Former President of Proscholamontessorii Assotiation

Computer skills and competences

Operating systems: Windows, Linux, MacOSX;
Applications: Windows Office, Origin, Latex

Artistic skills and competences

Piano

Other skills and competences

Sports: skiing, swimming, music, literature

Competence fields:

1. Bioceramics based on hydroxy- and fluorhydroxyapatites

- Preparation and characterization of hydroxyapatite-based materials
 - Modification of hydroxyapatites' properties by substitutions;
 - Preparation of high purity hydroxyapatite powders;
 - Chemical characterization of apatites (X-ray diffractometry IR-, Raman spectroscopy, morphologic analyses with SEM, thermal analyses);

2. *Advanced ceramics*

- Sintering of translucent Al₂O₃ -ceramics by Pulsed Electric Current Sintering Method (PECSM);
- Spatial Image Analysis of porous Al₂O₃ ceramic samples;
- Materials for fuel cells (registration and analyses of magnetic impedance data, gas chromatography);
- Thermal Spraying (setting into operation of the MASTER JET type flame spray gun); Nanopowders in MgO-C Refractories.

3. **Biofilter materials (beds)**

- natural materials (wood waste) as biofilter materials
- characterization and modelling of pressure drops across the beds

4. **Crystallization processes**

- mathematical modelling of the crystallization process of hydroxyapatite

h-index: 12

Organized events:

- **Workshop** with the topic: Flame-Spraying, Location: UBB, Cluj-Napoca, Date: 22. 03.2007., Co-organizer: Saint-Gobain Coating Solutions with a participation of national companies and academic staff;
- Hungarian-Romanian **Workshop** on Ceramic Coatings by Thermal Spraying, Location: Institute of Materials and Environmental Chemistry, CRC, HAS, Budapest, Date: 29-th April, 2010, Financed by Domus Hungarica;
- **Winter School:** Topic: Uncertainty in cognition, Location: Babeş-Bolyai University, Cluj-Napoca, Date: 27-28 January 2012, Financed by POSDRU/89/1.5/S/60189

Driving licence(s)

B category

Annexes

Lectures:

- Transport Phenomena, course, and seminar,
- Heat Transfer, course, seminar, lab. work
- Momentum Transfer, course, seminar, lab. work,
- Mass Transfer, course, seminar, lab. work,
- Bio-Nanotechnology, optional course, lab. work
- Engineering of biomaterials course, lab. work
- Characterization of biomaterials course, lab. work
 - Direction of diploma- and master works;
 - Direction of Advanced Materials laboratories;

Laboratories:

1. Inside the **Institute for Experimental Interdisciplinary Research (IEIR)**, Centre of Biomaterials, the “*Laboratory for the synthesis and characterization of micro and nano biomaterials*” was created.
2. Inside the **Institute for Research-Development-Innovation in Applied Natural Sciences**, the “*Chemical Engineering Research, Development and Innovation and Flame Spraying Laboratory*” was created

• **Projects and related publications**

1996: Preparation of high purity hydroxyapatite powders (Hungary)

Publications:

1. **R. Fábíán (Barabás)**, I. Kotsis, P. Zimány, P. Halmos: *Preparation and chemical characterization of high purity fluorapatite*, Talanta, 46, 1273-1277, **1998**
2. **R. Fábíán (Barabás)**, I. Kotsis: *Comparison of properties of fluorapatites prepared by solid state reaction and precipitation*, Hungarian Journal of Industrial Chemistry, 27, 259-263, **1999**

1996-1998: Sintering of translucent Al₂O₃ -ceramics by Pulsed Electric Current Sintering Method (Japan)

1997-1998: Direction of medical certification for preparation of hydroxyapatite powders (Hungary)

1998: Spatial Image Analysis of porous Al₂O₃ ceramic samples

(Germany)

1999-2000: Materials of fuel cells (Germany)

2000-2002: Characterization of biofilter materials (Germany)

2004-2005: Thermal Spraying (setting into operation of the MASTER JET type flame spray gun); Nanopowders in MgO-C Refractories (direction of DFG- Project); Geopolymers/Bioceramics (preliminary experiences), Direction of laboratories on methods of test for dense shaped refractory products; Lectures: Bioceramics and Flame Spraying (Germany)

Publication:

C.G. Aneziris, J. Hubalkova, **R. Barabás**, *Microstructure evaluation of MgO-C refractories with TiO₂- and Al-additions*, Journal of the European Ceramic Society, 27, 73-78, 2007

2006-2008: National Excellences Research Project for Researchers Reintegration financed by Ministry of Education and Research, Romania, with the title of the research: *Preparation, Characterization and Deposition of Apatites as Materials or Additive Materials to Artificial Bone Substitute - director*, **173.250 RON**

Publications:

1. E.S. Bogya, **R. Barabás**, V.R. Dejeu, Al. Csavdari, I. Baldea, *Hydroxyapatite modified with silica used for sorption of copper(II)*, Chemical Papers, 63 (5) 568–573, **2009**
2. V.R. Dejeu, **R. Barabás**, Al. Pop, E.S. Bogya, P.Ş. Agachi, *Mathematical Modeling for the Crystallization Process of Hydroxyapatite Obtained by Precipitation in Aqueous Solution*, Studia UBB Chemia, 3, 61-69, **2009**
3. V.R. Dejeu, **R. Barabás**, Al. Pop, E.S. Bogya, P.S. Agachi, *Kinetic studies for the transformation process of beta-whitlockite in hydroxyapatite*, Revista de Chimie, 12, 1251-1253, **2009**
4. V.R. Dejeu, **R. Barabás**, A.M. Cormos, E.S. Bogya, P.S. Agachi, *Growth rate of hydroxyapatite crystals obtained by precipitation*, Studia UBB Chemia, 2, 179-188, **2010**
5. E.S. Bogya, I. Bâldea, **R. Barabás**, A. Csavdári, G. Turdean, V.R.

Dejeu, *Kinetic studies of sorption of copper (II) ions onto different calciumhydroxyapatite materials*, Studia UBB Chemia, 2, 363-373, **2010**

6. Dejeu, V.R.*, Toader, S., Barabas R, Agachi, P.-S., *Application of numerical methods in the technology of hydroxyapatite*, Studia Universitatis Babes-Bolyai Chemia, Issue 4, Pages 161 - 165, **2010**
7. **R. Barabás**, E.S. Bogy, V.R. Dejeu, L. Bizo, Ch. G. Aneziris, T. Kratschmer, P. Schmutz, *Fluorhydroxyapatite coatings obtained by flame spraying deposition*, International Journal of Applied Ceramic Technology, 8, 3, 566–571, **2011**

2008: Elaboration of wood waste based bricks for construction, project based on service attestation, 01.02.2008-01.05.2008; S.C. Magic House S.R.L.

Patent: R. Barabás, J. Fazakas, A. Pop, L. Bizo: Material de construcții din deșeuri de lemn, nr. 127891, 2013

- Direction of projects with Romanian Companies:
- AZOMURES S.A, CHEMICER S.A, Quantumpharm S.A.

Patent:

1. Al. Pop, P.S Agachi, **R. Barabás**: Procedeu de desarseniere a soluțiilor puizate de carbonat de potasiu, nr. 123494, 2012
2. Al. Pop, V. Miclăuș, **R. Barabás**, S. Drăgan, V. Mitre, I. Mitre: Compoziție de îngrășământ foliar pe bază de calciu, și procedeu de obținere, nr. 123139, 2010
3. V. Mitre, I. Mitre, Al. Pop, **R. Barabás**, E. Bogy, V. Dejeu: Compoziție de îngrășământ foliar pe bază de azot, fosfor și potasiu, și procedeu de obținere, nr. 123140, 2010
4. **R. Barabás**, Al. Pop: Compoziție fungicidă cuprică și procedeu de obținere a acesteia, nr. 122617, 2009

2009-2010 "Improving University Management" Babes-Bolyai University, Cluj, <http://www.management-universitar.ro/>

(Romania)

2010- Structural Funds, Project title: *Doctoral program for high qualified human resource in the interdiscipliner research* (POSDRU/21/1.5/G/36154),

Babes-Bolyai University, Cluj, (Romania)

2010-2011 Terminology contract for Hungarian D3-IATE-HU-3, terminology research work in the filed of chemical tests and apparatuses, European Commission, DG Translation, Luxemburg

2017 Advanced Fellowship –INOVARE, Aplicația “*IOT*”-ului în prepararea hidroxiapatitei, Institutul STAR-UBB, 1oct. - 31 nov. 2017

Patent request:

Barabás R., Barabás L., Bizo L.: Sistem de monitorizare la distanță a unor parametri de reacție pentru obținerea hidroxiapatitei, Nr. 2018 00995, **2018**

2018 Responsible for Mobility project for researchers with experience from diaspora, invited researcher: Prof. Zoltán NAGY, Purdue University, 26-30 November 2018

2019 Responsible for Mobility project for researchers with experience from diaspora, invited researcher: Prof. Zoltán NAGY, Purdue University, 06-12 October 2019

2020

1. Project code: PN-III-P2-2.1-PED-2019-3664

Contract nr.: 348PED/2020 Proiect title: *Customized intelligent matrices for tissue regeneration and meta-inflamation control, PNCDI III - Programme 2, NR. 348PED/2020, (PRIM-TISS) – responsible,*

600.000 RON

Publications:

1. N.-I. Farkas, L. Marinceaș, **R. Barabás***, L. Bizo, A. Ilea, G. L. Turdean, M. Toșa, O. Cadar, L. Barbu-Tudoran, *Preparation and Characterization of Doxycycline-Loaded Electrospun PLA/HAP*

- Nanofibers as a Drug Delivery System*, Materials, 15 (6), **2022**
2. V. Andrei, N. I. Fiț 2, I. Matei, **R. Barabás**, L. A. Bizo, O. Cadar, B. A. Boșca, N.-I. Farkas, L. Marinceaș, D.-M. Muntean, E. Dinte, A. Ilea, *In Vitro Antimicrobial Effect of Novel Electrospun Polylactic Acid/Hydroxyapatite Nanofibres Loaded with Doxycycline*, Materials, 15(18), **2022**
 3. H. Petrut, A. Vészi, N. Muntean, O. Cadar, **R. Barabás***, *Mathematical Modelling of the Electrospinning Process for Production of Polyvinyl Alcohol Nanofibers*, Studia Chemia, LXVII (3), **2022**
 4. E. Dinte, D. M. Muntean, V. Andrei, B. A. Boșca, C. M. Dudescu, L. Barbu-Tudoran, G. Borodi, S. Andrei, A. F. Gal, V. Rus, L.-M. Gherman, O. Cadar, **R. Barabás**, M. Niculae, A. Ilea, *In vitro and in vivo characterisation of a mucoadhesive buccal film loaded with doxycycline hyclate for topical application in periodontiti*, Pharmaceutics, 15(580), **2023**
 5. V. Andrei, S. Andrei, A. F. Gal, V. Rus, L.-M. Gherman, B. A. Boșca, M. Niculae, **R. Barabás**, O. Cadar, E. Dinte, D.-M. Muntean, C. P. Peștean, H. Rotar, A. Boca, A. Chiș, M. Tăut, S. Candrea and A. Ilea, *Immunomodulatory Effect of Novel Electrospun Nanofibers Loaded with Doxycycline as an Adjuvant Treatment in Periodontitis*, Pharmaceutics, 15(707), **2023**
 6. L. Marinceaș, N.-I. Farkas, L. Barbu-Tudoran, **R. Barabás**, M. I. Toșa, *Deep eutectic solvent PCL-based nanofibers as drug delivery system*, Materials Chemistry and Physics, in press, **2023**
 7. N.-I. Farkas, G. L. Turdean, L. Bizo, L. Marinceaș, O. Cadar, L. Barbu-Tudoran, **R. Barabás**, *The effect of chemical composition and morphology on the drug delivery properties of hydroxyapatite-based biomaterials*, Ceramics International, accepted, **2023**

Patent requests:

1. Ilea Aranka, **Barabás Réka**, Bizo Liliana Antonela, Cadar Oana, Boșca Adina Bianca, Dinte Elena, *Matrice cu efect antimicrobian local și imunomodulator general pe bază de Doxiciclină încapsulată în nanofibre de acid polilactic și hidroxiapatită*, Cererea de brevet de invenție nr. **A/00385/05.07.2022**.

2. Dinte Elena, Muntean Dana Maria, Ilea Aranka, **Barabás Réka**, Bizo Liliana Antonela, Cadar Oana, Boşca Adina Bianca, *Compoziție de sistem mucoadeziv pentru eliberare topică a Doxiciclinei la nivelul cavității orale*, Cererea de brevet de invenție nr. **A/00445/25.07.2022**.

2. Project code: PN-III-P2-2.1-PED-2019-1714

Contract nr.: 261PED/2020 - responsible

Proiect title: *Biotechnology for a biomimetic composite hydrogel based on extracellular matrix components and Si-bioceramics enriched with small molecules (flavonoids) for osteochondral regeneration* - member (BIOSICON)

Patent request:

1. Oprüta Elena Iulia, Crăciunescu Oana, Seciu-Grama Ana Maria, **Barabás Réka**, Fazakas-Ráduly Orsolya-Csilla, Fazakas József, Moldovan Lucia, *Compoziție de hidrogel compozit pe bază de componente ceramice și naturale pentru regenerarea defectelor osteocondrale și procedeu de obținere*, Cerere brevet OSIM A/00427 din 19.07.2022.

Conference:

Oprita EI, Ciucan T, Seciu-Grama AM, **Barabás R.**, Fazakas-Raduly OC, Craciunescu O, *Biodegradable Cross-linked Composite Hydrogels based on Natural Components and Si-BTCP Enriched with Icaritin for Osteochondral Regeneration*, Malaysian Journal of Medicine and Health Sciences Vol.18 Supp 7, **May 2022** (eISSN 2636-9346)

2021

1. Project code: PN-III-P4-ID-PCE-2020-1301

Project title: *The swarm intelligence of independent artificial active particles*– member

2. Project code: ID P_40_374

Project title: *Partnership for the transfer of innovative technologies and advanced materials in the field of visual arts* (production, conservation, restoration) – member

Publication:

R. Barabás, O. Cadar, L. Bizo, *Comparative study of two commercial stoneware pastes for plastic shaping by pottery wheel*, Studia UBB Chemia, LXVIII, 1, 91-104, **2023**

3. Responsible for Mobility project for researchers with experience from diaspora, invited researcher: Prof. Zoltán NAGY, Purdue University, 09-15 December 2021

International partners:

- Saint-Gobain Coating Solutions
<http://www.coatingsolutions.saint-gobain.com>
- TU Bergakademie Freiberg <http://www.tu-freiberg.de>
- Technical University of Nagaoka <http://ishizaki.nagaokaut.ac.jp>
- Research Institute for Technical Physics and Material Science from Budapest <http://www.mfa.kfki.hu>
- The Semmelweis University from Budapest
<http://www.dgci.sote.hu>
- EMPA – Materials Science and Technology
http://www.empa.ch/plugin/template/empa/79/*/--/l=2
- Institute of Materials and Environmental Chemistry Budapest
<http://www.chemres.hu/ak>
- University of Szeged <http://www.u-szeged.hu/english/>

Membership in editorial boards:

1. Member of the editorial board of the International Journal of engineering and Technology Innovation (IJETI)
2. Member of the public body of the Hungarian Academy of Sciences
3. Member of editorial board Nanoscience and Nanoengineering
4. Scientific secretary of the Regional Committee of Hungarian Academy in Cluj-Napoca

Awards:

1. International salon PRO INVENT, 2012, Cluj-Napoca, Romania, **Certificate of excellence and silver medal** for the patent Nr. 123140, The obtaining procedure to a fertilizer composition based on nitrogen, phosphorous and potassium
2. International salon PRO INVENT, 2014, Cluj-Napoca, Romania, **Certificate of excellence and gold medal** for the patent Nr. 127891, Binder composition and obtaining procedure of the construction materials based on wood waste
3. EUROINVENT 2016, **GOLD MEDAL**, 19-21 May, Iasi
4. **Diploma of Excellence**, 2016, 19-21 May, Iasi
5. International salon PRO INVENT, 2017, Grand Prize EUROINVENT and Special Prize of Iuliu Hatieganu Medical University of Medicine, Cluj-Napoca, 22-24 March,
6. International Student Innovation and Scientific Research Exhibition – “Cadet INOVA’17”, **Silver Medal**, Sibiu, 27-29 April
7. Dentis Congress, The XVIIIth edition, **I. Prize**, *In vivo testing of the Titanium scaffolds manufactured by Selectiv Laser Melting (SLM)* 27-29 April, 2017, Cluj-Napoca, Romania