

Curriculum Vitae

Mihail-Dumitru BARBOIU

Senior Research Scientist CNRS (Directeur de Recherche-DR1)

Group Leader « Adaptive Supramolecular Nanosystems »

Professor, Sun-Yat-Sen University, Guangzhou, China.

European Young Investigator Award 2004

Fellow of Royal Society of Chemistry- FRSC



Birth: 27 10 1968, Pascani, Roumanie

Nationality: Romanian and French

Home Address: 50, rue Sémiramis, Le Village, Villa 9
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Web-site: <http://nsa-systems-chemistry.fr/>

Education

2004: Habilitation à Diriger les Recherches:

Université Montpellier II, France (Gerent : Prof. Jean-Marie LEHN, Nobel Prize in Chemistry 1987), 16 Avril 2004. *Auto-organized materials for membranes and dynamic supramolecular devices*

1998 : Ph. D. - Science of Materials

Université Montpellier II, France, (Ph.D. Supervisor: Dr. Christian GUIZARD). **27 Mars 1998, mention Très honorable avec les félicitations écrites du jury.** *Etude de membranes hétéropolysiloxanes contenant de nouveaux précurseurs macrocycliques. Applications au transport facilité de Ag⁺/Cu²⁺ et d'acides aminés (L-Phénylalanine).*

1993 : B. Sc. Engineer in Organic Chemistry

Université POLITEHNICA de Bucarest, Roumanie, Department of Analytical Chemistry and Instrumental Analysis, (Project supervisor: Prof. Dr. Constantin LUCA). Rapport: *Macrocyclic receptors as analytical reagents*

Employment and Positions

2013-present: Senior Research Scientist CNRS (Directeur de Recherche-DR1/Professor- PR1, Institut de Chimie: Institut Européen des Membranes de Montpellier, France.

2012-2017: ERA-Chair, Petru Poni Institute of Macromolecular Chemistry, Iasi, Romania. 2012

2008-2012: Senior Research Scientist CNRS (Directeur de Recherche-DR2/Professor- PR2, Institut de Chimie - Section 12, 01/10/2008): Institut Européen des Membranes de Montpellier, France (Prof Gérald POURCELLY).

2001-2008: CNRS Research Scientist/Associate Professor CR1– Group Leader : Institut Européen des Membranes de Montpellier, France (Prof. Louis COT et Prof Gérald POURCELLY).

2007-2011: Associate Professor University POLITEHNICA of Bucharest, Department of Analytical Chemistry and Instrumental Analysis.

1999-2001: Assistant Professor, Collège de France, ISIS-ULP, Strasbourg, France. (Prof. Jean-Marie LEHN, Nobel Prize in Chemistry 1987)

1993-1998: Assistant Professor: University POLITEHNICA of Bucharest, Department of Analytical Chemistry and Instrumental Analysis. (Prof. Constantin LUCA)

1993-1998: Research scientist: Research Centre for Macromolecular Materials and Membranes of Bucharest (R.C.M.M.M.) - Head of Supramolecular Chemistry Department. (Dr. Georgeta Popescu).

Awards and Honours

1. Invited professor, University of Nagoya, Japan; October 2019.
2. Gesellschaft Deutscher Chemiker GDCh Lecture, Chemistry, University of Bielefeld, January 23, 2019, Bielefeld, Germany.
3. Honorary Diploma of Romanian Chemical Society 2019
4. Gesellschaft Deutscher Chemiker GDCh Lecture, Chemistry, University of Karlsruhe and KIT, November 30, 2017, Karlsruhe, Germany.
5. Frontiers in Chemistry Distinguished Lecturer, Case Western Reserve University, March, 30 2017.
6. The Order of Faithful Service (Romanian: Ordinul Național "Serviciul Credincios"), 2016.
7. Royal Society of Chemistry, RSC Surfaces and Interfaces Award 2015.
8. Fellow of the Royal Society of Chemistry
9. Titre de reconnaissance pour les travaux en 2015 en Chimie Société Chimique de France -2015.
10. European Young Investigator Award 2004, European Science Foundation and EUROHORCS
11. Academic Merit Prize- Romanian Academy, Bucharest, 2008
12. "Costin D. Nenitescu" Medal and Honour Award of Romanian Chemical Society, 2007
13. Hybrid Materials and Application -HYMAP Mid-Carrer Award 2014
14. Fellowship of Pole Europeen Universitaire de Montpellier 1998-1999
15. Bronze medal – XIXth International Chemistry Olympiad, Vészprem- Hungary, 1987
16. Gold Medal – Ist Balkan Chemistry Olympiad - Bucharest, Roumania, 1987.

Research Monographs and Editor

1. Artificial Water channels, *Faraday Discuss*, **2018**, volume 209 M. Barboiu ed.
2. RSC Special Issue of Organic and Biomolecular Chemistry 2015, Multivalent Biomolecular Recognition - S. Vincent, O. Ramstrom and M. Barboiu Editors
3. Special Issue of *Israel J. Chem.* 2013, 53(1-2), Constitutional Dynamic Systems, Editors: M. Barboiu, J.M. Lehn.
4. *Constitutional Dynamic Chemistry*, M. Barboiu Volume Editor, *Topics Current Chemistry*, Springer, Verlag, 2012
5. *Handbook of Molecular Self-assembly*, K.V.Peinemann M. Barboiu Editors, Stanford Press, 2011.
6. M. Barboiu, *Bioinspired and biomimetic membranes*, Ed E. Ruiz Hitzki, Wiley, 2007, C 10, 316-343.
7. M. Barboiu, Constitutional transcription of nucléobases self-assembly codes, Wiley Encyclopedia of Chemical Biology, 2007 doi:10.1002/9780470048672.webc527.
8. *Systems Membranes- complex roadmaps toward functional devices and coupled processes*, Mihail Barboiu Editor, 2010, PRINTECH ED, Bucharest Romania, ISBN 978-606-521-526-9.
9. Special issue of Journal of Membrane Science, edited by Elsevier: "*From simple molecules to complex membrane systems: bringing the molecular information to membranes and the converse*" Dr. Mihail Barboiu Prof. Jean-Marie LEHN and Dr. Pierre Aimar Ed.
10. L. Cot, A. Ayrat, C. Gavach, J. Sanchez, N. Hovnanian, M. Barboiu, C. Luca, Procédés à Membrane dans la Protection de l'Environnement, 1999, Ars Docendi (Ed.) Bucharest, Romania, ISBN: 973-99121-3-3.

Granted Patents

1. M. Barboiu, M. Michau, Précurseur hybride sulfoné, son procédé de synthèse, **2008**, FR08/01508
2. M. Barboiu, M. Michau, Matériau hybride superconducteur, **2008**, FR08/01509
3. M. Barboiu, G. Nasr, C. Charmette, J. Sanchez, Membrane polymère autosupporté I, **2009**, FR09/0901540
4. M. Barboiu, G. Nasr, C. Charmette, J. Sanchez, Membrane polymère autosupportée II, **2009**, FR09/0901539
5. M. Barboiu, M Michau, Y. Leduc : Molécules bolaformes formant des canaux ioniques, **2012**

Top 10 Invited Lectures (out of 160 invited lectures)

1. M. Barboiu*, **Plenary Lecture**, Artificial water channels, Gordon Conference: Gordon Research Conference, Membranes: Materials and Processes., New London, NH, USA August 12 - 17, **2018**.
2. M. Barboiu, **Plenary Lecture**, Artificial Water Channels Systems, North American Membrane Society NAMS-2018 meeting 9-13 June, 2018, Lexington, USA.
3. M. Barboiu, **Plenary Lecture** Rubbery Organic Frameworks-ROFs-Tuning the gaz-diffusion through dynameric membranes, NAMS-PMSE ACS 2018 New Orleans, USA, 18-22 Mars, **2018**.

4. **M. Barboiu, Keynote Lecture**, Highly selective ion/water channels, SM7: Emerging Membrane Materials for Sustainable Separat, MRS 2017 Spring Meeting, Pheonix, USA, 15-22 April, **2017**.
5. **M. Barboiu, Plenary Lecture**, From Natural to Bioassisted and Biomimetic Artificial Water/Ion Channel Systems, 5th International Conference on Molecular sensors and Molecular Logic Gates MSMLG 2016, 24-28 July **2016**, Bath, G. Britain.
6. **M. Barboiu, Keynote Lecture**, Artificial Water Channels. 10th International Symposium on Macrocyclic & Supramolecular Chemistry (ISMSC-10). 7-11 June **2015**, Strasbourg, France.
7. **M. Barboiu, Plenary lecture**, From Natural to Bioassisted and Biomimetic Artificial Water Channel Systems, Academy Lectures, Romanian Academy, Magna Aula, 10 Mars **2015**.
8. **M. Barboiu, Keynote Lecture**, Rubbery Organic Frameworks-ROFs-Tuning the gaz-diffusion through dynameric membranes, 10th International Congress on Membranes and Membrane porcesses, ICOM2014, 20-25 July, **2014**, Shouzou, China.
9. **M. Barboiu, Keynote Lecture**, Dynamic behaviours and stabilization under confinement within supramolecular cages. 9th International Symposium on Macrocyclic & Supramolecular Chemistry (ISMSC-9). 7-11 June **2014**, Shanghai, China.
10. **M. Barboiu**, Invited lecture, Supramolecular dynamic membranes as information transfer devices, *1st European Chemistry Congress*, Budapest, Hungary, 27-31 august 2006.

CURRENT AND PAST FUNDING ID

2020-2024: Member of "Programmen H2020 INTELWATT- 742.525 Euros

2020-2024: Member of "Programme MERANET-ANR", SMARTMATTER- 215.525 Euros

2019-2023: Member of Research Training Network RTN Marie Curie – H2020, *PROTON* – 300000 Euros

2019-2020 Member of Programme interdisciplinaire CNRS BIOMIMETISME – 25000 Euros

2018-2022: Member of "Programme ANR", WATERCHANNELS- 196.525 Euros

2015-2019: Member of "Programme ANR", DYNAFUN- 260.000 Euros

2013-2016: Member of "Programme Blanc International ANR", DYNAMULTIREC- 260.000 Euros

2011-2015: Coordinator of Research Training Network RTN Marie Curie – FP7, *DYNANO -Dynamic Interactive Systems* – 4. 000.000 Euros/whole network

2011-2014: Member of "Programme Blanc ANR", MULTISELF-Multifunctional memory elements using supramolecular self-constructing interconnects- 100.000 Euros

2011-2015: Member of 7th Capacities REGPOT program: Strengthening the Romanian research capacity in Multifunctional Polymeric Materials –STREAM –FP7-REGPOT-2010-1-264115

2007-2013: Member of "Cristofor I. Simionescu" Postdoctoral Fellowship Programme, POSDRU/89/1.5/S/55216, European Social Funds Programme-500000 euros.

2010-2013: Member of "Programme Blanc ANR", DYNAMERS-Dynamic Polymers- 250.000 Euros

2011-2015: Coordinator IEM of 7th Framework Programme Research Potential: Strengthening the Romanian research capacity in Multifunctional Polymeric Materials

2007-2010: Coordinator of "Programme Blanc ANR", POLYFUNMAG-Self-organizing supramolecular and bioorganic dynamic systems within hybrid organic-inorganic matrix of magnetic properties- 250.000 Euros

2005-2010: Deputy Director of Research Training Network RTN Marie Curie - FP6, *Dynamic -Dynamic Interactive Chemical Biology* - 250.000 Euros

2005-2009: Coordinator of European Young Investigator Award: SUPRACOMBIMAT-*Dynamic Adaptive Materials for Separation and Sensing Microsystems*- 1.000.000 Euros

2005-2009 Coordinator CNRS (IEM:LGC) WP 9 "Membrane Materials" Network of Excellence (NoE) NANOMEMPRO

2004-2006- International Advisory Board RAINS projects (Romanian Action for Integrating Networking and Stregthening the ERA) FP6 2005-2008, 200 000 euros

2008-2009 Coordinator of PAI Egide STAR Hanyang University Seoul, Corea, 50000 Euros.

2004-2005 Coordinator of PAI Egide – Brancusi, (UPB Bucarest, Romania), 25000 euros

2005- Scientific Director of Industrial program BOSCH-LOMB Chauvin Montpellier - 28000 Euros/year

2002-2005 : Coordinator of « ACI Jeunes Chercheurs » MNRT-France ACI 4034, 200 000 euros

1999-2001: Group Leader, ERBIC15-CY98-0147, INCO-COPERNICUS Project: 200 000 euros

1997-1999: Coordinator of Macrocyclic Research program- 4 thematic programs, 200 000 euros (MNERT, Romania).

International Congress or Session Chair

1. Chairman ACS Fall meeting symposium "Artificial Water Channels" -26-29 August 2019, San Diego, USA,
2. Chairman of Faraday Discussions RSC "Artificial Water Channels" 25-27 June 2018, Glasgow, GB, <http://rsc.li/water-channels>.
3. ViceChair, 4th International Symposium on Hybrid Materials and Processes, HYMAP 2017, Busan, Korea, 5-8 November **2017**
4. Session Chair, Responsive Membranes and Biomembranes 11th International Congress on Membranes and Membrane processes, ICOM2017, 30 July- 5 August, **2017**, San Francisco, USA.
5. Session Chair, Responsive Membranes and Biomembranes (Joint EMS-NAMS), North American Membrane Society NAMS-2016 meeting 21-25 Mai, **2016**, Bellevue, USA.
6. Chairman of Dynamic Constitutional Systems Symposium, 27-28/07/2015, Montpellier France.
7. Chairman of Colloque Franco-Roumain de Chimie Appliquée CoFRRoCA 2014, 15-18 September 2014, Montpellier, France.
8. Session Chair, Responsive Membranes and Biomembranes (Joint EMS-NAMS), North American Membrane Society NAMS-2013 meeting 8-12 June, **2013**, Boise, USA.
9. Session Chair, Honorary session: Founding fathers of inorganic membranes, International Conference on Inorganic membranes- ICIM2012, 9-13 June, 2012, Enschede, the Netherlands.
10. Session Chair, EMS-NAMS session, Euromembrane-2012 23-27 September, **2012**, London, UK.
11. Session Chair, Responsive Membranes and Biomembranes (Joint EMS-NAMS), North American Membrane Society NAMS-2012 meeting 10-13 June, **2012**, New Orleans, USA.
12. Chairman of the Symposium "Open Problems in Systems Chemistry", Montpellier, 23-25 01 2012.
13. Session Chair, Gordon Research Conferences: Membranes: Materials and Processes, 29 July 03 August, 2012, Colby Sawyer College, New London, USA.
14. Chairman of European Membrane Society Summer School 2010, Systems Membranes-Complex Roadmaps toward Devices and Coupled Processes, 14-19 June 2010, Bucharest, Romania.
15. Chair session, North American Membrane Society, NAMS 2010, Washington DC, , 17-22/07, 2010.
16. Chair session, North American Membrane Society, NAMS 2012, New Orleans,, 9-13/06, 2010.
17. Member of Scientific Committee of EUROMEMBRANE 2009, Montpellier 6-10/09/2009.
18. Chairman of the IInd EURYIAS Congress: "Complexity and Evolution in Matter, Molecules, Life and Society" 29 April-03 May 2008, Bucharest, Romania.
19. Chairman of the Ist EURYIAS Congress: "Complexity and Diversity in Matter, Molecules, Life and Society" 29 November-02 December 2006, Strasbourg, France.
20. Chairman Colloque GDR 2922: Matériaux Hybrides Multifonctionnels, La Grande Motte, Mai 2006

Member of Editorial Board

Membranes - mdpi.com/journal/membranes

Journal of Membrane Science

Journal of Enzyme Inhibition and Medicinal Chemistry

Journal of Colloid and Surface Chemistry,

Member of University Politehnica of Bucharest, Scientific Bulletin"

Revue Roumaine de Chimie

Member of Scientific Societies

- ◆ FRSC Fellow, Royal Society of Chemistry 2015-
- ◆ European Membrane Society : 1998- present; 2008 Member of EMS Council
- ◆ Société Française de Chimie 1999-present
- ◆ Société Roumaine de Chimie : 1997- present
- ◆ American Chemical Society ACS 2003- present
- ◆ American Association for the Advancement of Science (AAAS): 2006- present
- ◆ Association Roumaine de Chimie des Colloïdes et des Surfaces : 1995- 1998
- ◆ Société de Génie Chimique de Roumanie : 1997-1998

LIST OF PUBLICATIONS, SEPTEMBER 2020

Peer review publications – 301
Peer review papers 241
Peer review proceedings –30
Books and Chapters – 24
Patents-6

Invited lectures and communications -421
Invited Lectures-163
Invited Seminars – 80
Communications -111

The top 10 publications, as senior author

1. S.-P. Zheng, Y.-H. Li, J.-J. Jiang, A. van der Lee, D. Dumitrescu, M. Barboiu, Self-Assembled Columnar Triazole-Quartets - an example of synergetic H-bonding / Anion- π Channels, **Very Important paper and Cover** *Angew. Chem.* **2019**, *131*, 12165–12170, *Angew. Chem. Int. Ed.* **2019**, *58*, 12037–12042. <https://doi.org/10.1002/anie.201904808>
2. I. Kocsis, M. Sorci, H. Vanselous, S. Murail, S. E. Sanders, E. Licsandru, Y.-M. Legrand, A. van der Lee, M. Baaden, P. B. Petersen, G. Belfort*, **M. Barboiu***, Oriented chiral water wires in artificial transmembrane channels. *Science Adv.* **2018**, *4*, eaao5603. DOI: 10.1126/sciadv.aao5603.
3. A. Gilles, **M. Barboiu***, Highly Selective Artificial K⁺ Channels: An Example of Selectivity- Induced Transmembrane Potential. *J. Am. Chem. Soc.*, **2016**, *138*(1), 426-432.
4. E. Licsandru, I. Kocsis, Y.-x. Shen, S. Murail, Y.-M. Legrand, A. van der Lee, D. Tsai, M. Baaden, M. Kumar, **M. Barboiu***, Salt-excluding artificial water channels exhibiting enhanced dipolar water and proton translocation, *J. Am. Chem. Soc.*, **2016**, *138*, 5403-5409.
5. **M. Barboiu***, Y. Le Duc, A. Gilles, P.-A. Cazade, M. Michau, Y.-M. Legrand, A. van der Lee, B. Coasne, P. Parvizi, J. Post, T. Fyles. An artificial primitive mimic of Gramicidin-A channel, *Nature Comm.* **2014**, *5*, 4142. DOI: 10.1038/ncomms5142.
6. **M. Barboiu***, Artificial water channels, *Angew. Chem. Int. Ed.* **2012**, *51*, 11674-11676.
7. Y. Le Duc, M. Michau, A. Gilles, V. Gence, Y.-M. Legrand, A. van der Lee, S. Tingry, **M. Barboiu***, Imidazole I-quartet water and proton dipolar channels, *Hot paper. Angew. Chem. Int. Ed.* **2011**, *50*(48), 11366-11372.
8. Y. M. Legrand, A. van der Lee, **M. Barboiu***, Single-crystal X-ray structure of 1,3-dimethylcyclobutadiene by confinement in a crystalline matrix, *Science*, **2010**, *329*, 299-302.
9. A. Cazacu, Y.M. Legrand, A. Pasc, G. Nasr, A. van der Lee, **M. Barboiu***, Dynamic hybrid materials for constitutional selective membranes, *Proc. Natl. Acad. Sci.*, **2009**, *106*, 8117-8122.
10. A. Cazacu, C. Tong, A. van der Lee, T.M. Fyles, **M. Barboiu***, Columnar Self-Assembled Ureidocrown-ethers – an Example of Ion-channel Organization in Lipid Bilayers, *J. Am. Chem. Soc.*, **2006**, *128*, 9541-9548.

The top 10 review publications

1. **M. Barboiu***, Encapsulation versus self-aggregation toward highly selective artificial K⁺- Channels, *Acc. Chem. Res.* **2018**, *51*, 2711–2718.
2. Y. Zhang, **M. Barboiu***, Constitutional Dynamic Materials. Toward Natural Selection of Function, *Chem. Rev.* **2016**, *116*, 809-834.
3. **M. Barboiu***, Artificial Water Channels –incipient innovative developments. *Chem. Commun.*, **2016**, *52*, 5657- 5665.
4. **M. Barboiu*** and A. Gilles, From natural to bio-assisted and biomimetic artificial water channel systems. *Acc. Chem. Res.* **2013**, *46*, 2814–2823.
5. **M. Barboiu**, M. Stadler, J.M. Lehn*, Controlled folding, motional and constitutional dynamic processes of polyheterocyclic molecular strands, *Angew. Chem.* **2016**, *128*, 4200 – 4225; *Angew. Chem. Int. Ed.* **2016**, *55*, 4130 – 4154.
6. **M. Barboiu***, The future of membranes - toward the natural selection of functions. *Actualité Chimique*, **2015**, *399*, 37-43.
7. E. Mahon, **M. Barboiu***, Synthetic multivalency for biological applications, *Org. Biomol. Chem.*, **2015**, *13*, 10590-10599.
8. **M. Barboiu***, Constitutional hybrid materials-toward selection of functions. *Eur J. Inorg. Chem.* **2015**, 1112-1125.
9. Y.M. Legrand, **M. Barboiu***, Self-Assembled Supramolecular Channels: Toward Biomimetic Materials for Directional Translocation, *Chem. Rec.* **2013**, *13*(6), 524-538.
10. **M. Barboiu***, Dynamic Interactive Systems - Dynamic selection in hybrid organic-inorganic constitutional networks, Feature Article, *Chem. Commun.* **2010**, *46*, 7466-7476.