

CURRICULUM VITAE

I. PERSONAL DATA

- SURNAME: **Ardelean** FIRST NAME: **Ioan**
- DATE AND PLACE OF BIRTH: July 20, 1966, Vadu-Izei, Romania
- NATIONALITY: Romanian
- SEX: Male
- MARRITAL STATUS: Married, 1 son



II. EDUCATION

- 1980-1984: Industrial Lyceum, Sighetu-Marmatiei, Romania
- 1985- 1989: “Babes-Bolyai” University, Cluj-Napoca, Faculty of Physics, Nuclear Physics Specialisation
- 1997: Ph.D. in Molecular Physics, “Babes-Bolyai” University, Faculty of Physics, Cluj-Napoca, Romania, Thesis title: "Modern methods in nuclear magnetic resonance with applications in obtaining of dynamic and structural information on some molecular compounds", PhD supervisor: Prof. Dr. Dan E.Demco
- Spoken languages: English, German.

III. CAREER/EMPLOYMENT:

- 1990-1997: - Assistant Professor, Physics Department, Faculty of Materials Science and Engineering Technical University of Cluj-Napoca, Romania.
- 1998-2002:- Lecturer, Physics Department, Faculty of Materials Science and Engineering, Technical University of Cluj-Napoca, Romania.
- 2002-2006: Associated Professor, Physics Department, Faculty of Materials Science and Engineering, Technical University of Cluj-Napoca, Romania
- since 2006: Full Professor, Physics Department, Faculty of Materials Science and Engineering, Technical University of Cluj-Napoca, Romania
- since 2007: PhD supervisor in the field of materials science and engineering

IV. SPECIALIZATIONS

- 1.10.1996-31.03.1997:-**DAAD** (Deutscher Akademischer Austauschdienst) research fellowship, at Ulm University, Germany, Sektion Kernresonanzspektroskopie, the group of Prof. Dr. Rainer Kimmich.
- 28. 10.1998-28.02.1999:- German language course at **Goethe Institut**, Schwaebisch Hall, Germany
- 1.03.1999-1.12.2000: **Alexander von Humboldt** research fellowship at Ulm University, Germany, Sektion Kernresonanzspektroskopie, the group of Prof. Dr. Rainer Kimmich
- 1.12.2000-28.02.2001: **Invited Professor** at Ulm University, Sektion Kernresonanzspektroskopie
- 1.07.2002-30.09.2002: **Resumption of the AvH fellowship** at Ulm University, Germany, Sektion Kernresonanzspektroskopie, the group of Prof. Dr. Rainer Kimmich
- 2002-2007: multiple research visits (2-3 Months/Year) at Ulm University in the group of Prof. R. Kimmich

V. SCIENTIFIC INTEREST

A) General interest

- Nuclear Magnetic Resonance (NMR) techniques and applications
- Molecular dynamics under confinement and at interface

B) Specific interest

- Nonlinear effects in high-field NMR: theoretical aspects and applications in diffusion measurements and NMR imaging
- Development of new NMR techniques for diffusion and flow measurements in the presence of inhomogeneous and internal gradients
- Development of new techniques for localization and imaging on the basis of radio frequency gradients

- Applications of the Field-Cycling NMR technique to investigate molecular dynamic of fluids confined in porous media
- Vapour phase contribution to diffusion processes in partially filled porous media
- NMR studies of cement and concrete samples
- Molecular dynamic inside polymeric capsules for controlled drug delivery

VI. PUBLICATIONS:

- **3** books (in Romanian)
- **1** review article (73 pag.)
- **41** articles in **ISI** journals + **14** articles in refereed journals
- more than **50** contributions to conferences

VII. RESEARCH GRANTS OBTAINED BY NATIONAL AND INTERNATIONAL FUNDING RESOURCES

- Project director of an: “**INSTITUTSPARTNERSCHAFT**” between Ulm University, Germany and Technical University from Cluj-Napoca (Project financed by **Alexander von Humboldt foundation**. Project title: “Transport und Kernspin-Relaxationsphänomene in Porösen Medien” (1.05.2003-30.04.2008).
- Project director of a grant: **CNCSIS 411** (financed by the Romanian Ministry for Education and Research). Project title: “Diffusion phenomena in partially saturated porous media investigated by nuclear magnetic resonance”(1.01.2003-31.12.2005).
- Project director of a grant: **CERES 4-36/4.11.2004** (financed by the Romanian Ministry for Education and Research). Project title: „Principles and unconventional aspects of NMR diffusometry of confined liquids”(15.11.2004-15.11.2006).
- Project director of a grant **CNCSIS type A/ 1292/2006** (financed by the Romanian Ministry for Education and Research). Project title: Dynamics of polar and non polar molecules under confinement in nanometric and micrometric pores (1.03.2007-15.09.2008).
- Project director of a grant **CEEX MATNANTECH 58/2006** (financed by the Romanian Ministry for Education and Research). Project title: Molecular dynamics inside polymeric nanocapsules. NMR investigations (15.08.2006-19.09.2008).
- Project director of a grant **PN2-NANOQMED 61-002/2007** (financed by the Romanian Ministry for Education and Research). Project title: Obtaining and characterization of new target nano-medicines with naftochinonic active substance (14.09.2007-15.09.2010)
- Project director of an: “**INSTITUTSPARTNERSCHAFT**” between Technical University Ilmenau, Germany and Technical University from Cluj-Napoca (Project financed by **Alexander von Humboldt foundation**. Project title: Molecular dynamics during the phase transition of liquids confined inside porous media (1.01.2011-31.12.2013).
- Project director of a grant **PN II -IDEI -2011-3-0238** (financed by the Romanian CNCS). Project title: Nuclear magnetic resonance studies of surface effects on dynamics of molecules confined inside porous media with magnetic impurities (1.10.2011-1.10.2015)

VIII. TEACHING EXPERIENCE

- Lectures on basics of physics for engineers
- Lectures on quantum mechanics for engineers
- Lectures on non-destructive test methods in civil engineering (Master level)
- Seminar and laboratory activities for students in physics and engineering
- Coordination of 7 PhD students

IX. MEMBERSHIP

- Member of the “Romanian Physical Society”
- Member of the “Humboldt Club Transilvania”

Cluj-Napoca, 9.03.2015,

Scientific Leadership Profile

A. Scientific experience

The scientific expertise of Prof. Dr. Ioan Ardelean is related to the soft matter characterization using **nuclear magnetic resonance** techniques. The experience in this field is proven by the number of the published papers into the well appreciated **ISI journals** (Journal of Chemical Physics, Journal of Magnetic Resonance, Chem. Phys. Letters) and a **monographic paper** written in Annual Reports on NMR Spectroscopy (73 pages, first author, *written at* editor's invitation). This scientific activity was **internationally recognised** by the invitation to act as a **reviewer** for **many ISI journals** or by the invitation to present the results as "**invited speaker**" in **7** international conferences:

- Ampere XII NMR School, 6.06-11.06.2004, Zakopane, Poland (<http://users.uj.edu.pl/~ufjblich/lectamp12.htm>)
- EUROMAR/EENC 3-8 July 2005, Veldhoven, Holland 2005,
- 8th International Bologna Conference on Magnetic Resonance in Porous Media, Sept. 10-14, Bologna, Italy 2006 (<http://www.mrpm.org/index.htm>)
- XXII Conference on Radio and Microwave Spectroscopy (RAMIS), April 22- 25, , Bedlewo-Poznan, Poland 2007 (<http://www.ifmpan.poznan.pl/ramis/speakers.php>)
- 11th Central and Eastern European NMR Symposium, October 4-6, Cluj-Napoca, Romania 2009 (<http://chem.ubbcluj.ro/CEUM2009/>)
- 8th Conference on FFC NMR Relaxometry, 23-25 May 2013, Turin, Italy (<http://www.ffcrelax.com/ffcrelax/mainpage.php?folder=home&page=index.php>);
- Ampere NMR School, 22-28 June 2014, Zakopane, Poland (prove on invitation can be provided on request)

Prof.Dr.Ioan Ardelean was also one of the members of the international **scientific advisory committee** of the international "Bologna Conference on Magnetic Resonance in Porous Media" (between 2006-2010). (<http://cory6.mit.edu/conference/MRPM/Committee.html>)

The main scientific contributions of Prof. Ioan Ardelean in his area of research are:

- Elucidation of the mechanism leading to nonlinear echoes in high field NMR
- Generating of new spin echoes: the nonlinear stimulated echo, nutation echo, grating echo. Note that "nutation echo" has found multiple applications in NMR of inhomogeneous fields (this is proven by a simple search with Google).
- Developing of new techniques for diffusion measurements (based on nonlinear echoes, MAGROFI, fringe field gradients, radiofrequency gradients)
- Developing of new localization techniques in NMR imaging using "nutation echo"
- Proposing of a theoretical model to describe the two phase liquid-vapour exchange phenomena on stimulated echo attenuation
- Demonstration of the vapour phase contribution to the enhancement of the effective diffusivity in porous media
- Developing of a new method for dimension determination of polymeric nanocapsules used as drug carriers
- Developing of new methods the characterisation of cement based materials based in internal gradients;
- Developing a model for liquid distribution inside partially saturated porous media and the NMR testing approach.

These and other contributions were disseminated in **55 papers** or presented in many conferences and workshops. Note that these papers accumulated more than **360 citations in ISI journals** . The Hirsch-**h** factor of all publications in 2015 was **12** (according with WEB of Science: <http://www.researcherid.com/rid/B-7363-2011>).

B. The managerial experience

The managerial competence of Prof. Ioan Ardelean has been demonstrated up to now in three directions: i) **coordination** of research projects; ii) **foundation** of a new NMR laboratory; iii) **organising** of more international workshops. The corresponding activities are summarised below:

i) Coordination of research projects

The project identifier	Project title	Granted interval	The role
INSTITUTSPARTNERSCHAFT with Ulm University, Germany (Financed by Alexander von Humboldt foundation)	Transport und Kernspin-Relaxationsphänomene in porösen Medien	30.04.03-30.04.08	Project manager
Grant CNCSIS, A type / code 411 / 2003/	Vapor contribution to the effective diffusion in partially saturated porous media	1.03.2003-5.09.2005	Project manager
Project CERES 4-36/4.11.2004	Unconventional aspects of the NMR diffusometry	15.11.2004-15.11.2006	Project manager
Grant CNCSIS type A/ Cod 1292/2006	Dynamics of polar and non polar molecules under confinement in nanometric and micrometric pores	1.03.2007-15.09.2008	Project manager
Project CEEX MATNANTECH 58/2006	Molecular dynamics inside polymeric nanocapsules. NMR investigations.	15.08.2006-19.09.2008	Project manager
Project PN2-NANOQMED 61-002/2007	Obtaining and characterization of new target nano-medicines with naftochinonic active substance.	14.09.2007-15.09.2010	Project manager for UTCN
INSTITUTSPARTNERSCHAFT with Technical University Ilmenau, Germany (Financed by Alexander von Humboldt foundation)	Molecular dynamics during the phase transition of liquids confined inside porous media	1.01.2011-31.12.2013	Project manager
Project PN II -IDEI -2011-3-0238	Nuclear magnetic resonance studies of surface effects on dynamics of molecules confined inside porous media with magnetic impurities	1.10.2011-1.10.2016	Project manager

The results of the above mentioned projects were disseminated in international conferences (even as **invited speaker**) or published in more than **20 ISI indexed** journals.

ii) Foundation of a new NMR laboratory

With the financial support of the above-mentioned projects, Prof. Ioan Ardelean has founded in **2007** a new **NMR relaxometry and diffusometry laboratory**. This laboratory is dedicated to the investigation of translational and rotational diffusion of molecules confined inside porous structures and is **the first of this kind in Romania**. The laboratory is in accordance with international standards and is well suited for a multitude of applications. One can perform here even “inside-out” NMR measurements. The web page of the new laboratory can be visited at: <http://utclujnmr.weebly.com/>. The main scientific

instruments of the NMR diffusometry and relaxometry laboratory of the UTCN and their general applications are indicated below.

- **NMR spectrometer MINISPEC MQ20** (Bruker, Germany, 4T/m gradient unit; temperature range: -20+100 Celsius): This is a low field instrument operating at 0.47T designed for diffusion and relaxation measurements in porous media and systems where magnetic impurities may be present. The investigations at low fields allow neglecting of internal gradient effects under some specific conditions. The measurements provide information about translational dynamics of molecules and thus about restrictions on their translational movement (ex. pore size, molecule size, polymer size, anomalous diffusion).
- **Fast Field Cycling NMR relaxometer** (Stelar SmarTracer, Italy). This instrument has the unique ability of measuring relaxation times at different magnetic fields (proton frequency range: 10 kHz – 10 MHz. On this basis, information about the rotational dynamics of molecules and polymers can be extracted. The strength of molecules interaction with the surface (affinity to a specific surface), diffusion at the surface of porous media or the polymerization reaction can be investigated under bulk or confined conditions
- **NMR Surface explorer**: This is a low field NMR instrument operating at 20MHz proton resonance frequency that allows measuring of the relaxation time and diffusion coefficient of molecules confined inside porous media of a high volume that cannot be introduced in a standard NMR tube. The main advantage of such an instrument in our planned investigations is that it naturally produces a 20T/m constant gradient that can be used for diffusion measurements. This gradient should overcome the internal gradients by one order of magnitude and thus would allow accurate diffusion measurements.

Other laboratory equipment is: Leica DM2500M metallographic microscope, vacuum oven, balances, oscilloscopes, signal generators, RLC-meter, moisture meters, PH meter, precision multi-meters and many other laboratory tools (glassware, digital thermometers, etc.). The laboratory is **fully functional** and all the objects and equipments are **brand new**.

iii) Organising of international workshops

(<http://www.phys.utcluj.ro/resurse/Workshops.html>)

- Between 25.02 and 1.03.2004: Organiser of the **1st Transylvanian NMR Workshop**: “New frontiers of magnetic resonance”. The workshop was organized in Paltinis with the financial support from **Alexander von Humboldt** foundation, Germany. There were 22 participants attending this workshop: 10 Germans and 12 Romanians.
- Between 23.05 and 25.05.2010: Co-organizer of a Humboldt Kolleg in Cluj-Napoca with about 100 participants from Romania and neighbour countries.
- Between 18.09 and 21.09.2009: Organiser of the **2nd Transylvanian NMR Workshop**: “New frontiers of magnetic resonance”. The workshop was organised in Cluj-Napoca with 23 participants attending this workshop.
- Between 23.09 and 25.09.2011: Organiser of the **3rd Transylvanian NMR Workshop**: “New frontiers of magnetic resonance”. The workshop was organised in Cluj-Napoca with 27 participants attending this workshop.
- Between 27.09 and 29.09.2013: Organiser of the **4th Transylvanian NMR Workshop**: “New frontiers of magnetic resonance”. The workshop was organised in Cluj-Napoca with 25 participants attending this workshop.

C. Reviewer

Prof. Ioan Ardelean acts as a scientific reviewer for the following **ISI journals**:

Journal of Chemical Physics, Journal of Magnetic Resonance, Chemical Physics Letters, Magnetic Resonance in Medicine, Chemistry of Materials, Chemical Engineering and Technology.

He is also an evaluator of different grant applications organised by the Romanian Science Agencies (UEFISCDI, ANCS). Note: invitations can be provided on request

Publications

A. Books/Book chapters/Monographic papers

1. I. Ardelean, "Introductory quantum mechanics"(in Romanian), Editura U.T.Press, Cluj-Napoca 2002; ISBN 973-8335-24-8(199 p)
2. I. Ardelean, "Physics for engineers"(in Romanian), Editura U.T.Press, Cluj-Napoca 2005 (222 p); ISBN 973-662-168-5
3. I. Ardelean, Nuclear Magnetic Resonance for Engineers (in Romanian), Editura U.T. Press, Cluj-Napoca, 2013, ISBN: 978-973-662-905-1
4. I. Ardelean and R. Kimmich "Principles and unconventional aspects of NMR diffusometry", in "Annual Reports on NMR Spectroscopy", vol. 49, pag.43 (Ed. G.A.Webb), Academic Press, 2003 (**73 p-** paper written at the publisher's **invitation**)
5. I. Ardelean and R. Kimmich, Beyond the classical NMR diffusometry, in „Diffusion NMR of Confined Systems: Fluid Transport in Porous Solids and Heterogeneous Materials”, (Ed. Valiullin), Publisher, Royal Society of Chemistry, 2016 (submitted)

B. Papers in ISI indexed journals

1. Demco, D.; Ardelean, I., Spatial localized single quantum heteronuclear polarization transfer. *Acta Physica Polonica a* **1994**, *86* (3), 407-425
2. Demco, D.; Ardelean, I., Spatial localized double-quantum NMR heteronuclear coherence transfer in solids by indirect detection. *Acta Physica Polonica a* **1996**, *89* (5-6), 699-715
3. Ardelean, I.; Kimmich, R.; Stapf, S.; Demco, D., Multiple nonlinear stimulated echoes. *Journal of Magnetic Resonance* **1997**, *127* (2), 217-224
4. Ardelean, I.; Stapf, S.; Demco, D.; Kimmich, R., The nonlinear stimulated echo. *Journal of Magnetic Resonance* **1997**, *124* (2), 506-508
5. Ardelean, I.; Kimmich, R.; Stapf, S.; Demco, D., The nonlinear stimulated echo in the presence of inequivalent spins. *Journal of Magnetic Resonance* **1998**, *132* (1), 138-143
6. Kimmich, R.; Ardelean, I., Intermolecular multiple-quantum coherence transfer echoes and multiple echoes in nuclear magnetic resonance. *Journal of Chemical Physics* **1999**, *110* (8), 3708-3713
7. Kimmich, R.; Ardelean, I.; Lin, Y.; Ahn, S.; Warren, W., Multiple spin echo generation by gradients of the radio frequency amplitude: Two-dimensional nutation spectroscopy and multiple rotary echoes. *Journal of Chemical Physics* **1999**, *111* (14), 6501-6509
8. Ardelean, I.; Kimmich, R., Demagnetizing field effects on the Hahn echo. *Chemical Physics Letters* **2000**, *320* (1-2), 81-86
9. Ardelean, I.; Kimmich, R., Demagnetizing field effects on the Hahn echo (vol 320, pg 81, 2000). *Chemical Physics Letters* **2000**, *332* (5-6), 624-625
10. Ardelean, I.; Kimmich, R., Diffusion measurements using the nonlinear stimulated echo. *Journal of Magnetic Resonance* **2000**, *143* (1), 101-105
11. Ardelean, I.; Kimmich, R., Diffusion measurements with the pulsed gradient nonlinear spin echo method. *Journal of Chemical Physics* **2000**, *112* (12), 5275-5280
12. Ardelean, I.; Kimmich, R.; Klemm, A., The nutation spin echo and its use for localized NMR. *Journal of Magnetic Resonance* **2000**, *146* (1), 43-48
13. Ardelean, I.; Scharfenecker, A.; Kimmich, R., Two-pulse nutation echoes generated by gradients of the radiofrequency amplitude and of the main magnetic field. *Journal of Magnetic Resonance* **2000**, *144* (1), 45-52

14. Ardelean, I.; Kossel, E.; Kimmich, R., Attenuation of homo- and heteronuclear multiple spin echoes by diffusion. *Journal of Chemical Physics* **2001**, *114* (19), 8520-8529
15. Kossel, E.; Kimmich, R.; Ardelean, I., The influence of J-coupling on heteronuclear nonlinear (or multiple) spin echoes. *Chemical Physics Letters* **2001**, *347* (1-3), 157-162
16. Scharfenecker, A.; Ardelean, I.; Kimmich, R., Diffusion measurements with the aid of nutation spin echoes appearing after two inhomogeneous radiofrequency pulses in inhomogeneous magnetic fields. *Journal of Magnetic Resonance* **2001**, *148* (2), 363-366
17. Ardelean, I.; Kimmich, R., Response to "Comment on 'Diffusion measurements with the pulsed gradient nonlinear spin echo method' " [J. Chem. Phys. 116, 1204 (2002)]. *Journal of Chemical Physics* **2002**, *116* (3), 1206
18. Ardelean, I.; Mattea, C.; Farrher, G.; Wonorahardjo, S.; Kimmich, R., Nuclear magnetic resonance study of the vapor phase contribution to diffusion in nanoporous glasses partially filled with water and cyclohexane. *Journal of Chemical Physics* **2003**, *119* (19), 10358-10362
19. Ardelean, I.; Kimmich, R., The diversity of B-0 and B-1 gradient NMR diffusometry techniques. *Israel Journal of Chemistry* **2003**, *43* (1-2), 9-24
20. Buhai, B.; Hakimov, A.; Ardelean, I.; Kimmich, R., NMR acceleration mapping in percolation model objects. *Journal of Magnetic Resonance* **2004**, *168* (1), 175-185
21. Mattea, C.; Kimmich, R.; Ardelean, I.; Wonorahardjo, S.; Farrher, G., Molecular exchange dynamics in partially filled microscale and nanoscale pores of silica glasses studied by field-cycling nuclear magnetic resonance relaxometry. *Journal of Chemical Physics* **2004**, *121* (21), 10648-10656
22. Ardelean, I.; Buhai, B.; Kimmich, R., Grating spin echoes. *Applied Magnetic Resonance* **2004**, *26* (3), 307-315
23. Ardelean, I.; Farrher, G.; Mattea, C.; Kimmich, R., Nuclear magnetic resonance study of the vapor contribution to diffusion in silica glasses with micrometer pores partially filled with liquid cyclohexane or water. *Journal of Chemical Physics* **2004**, *120* (20), 9809-9816
24. Ardelean, I.; Farrher, G.; Mattea, C.; Kimmich, R., NMR study of the vapor phase contribution to diffusion in partially filled silica glasses with nanometer and micrometer pores. *Magnetic Resonance Imaging* **2005**, *23* (2), 285-289
25. Farrher, G.; Ardelean, I.; Kimmich, R., Probing four orders of magnitude of the diffusion time in porous silica glass with unconventional NMR techniques. *Journal of Magnetic Resonance* **2006**, *182* (2), 215-220
26. Farrher, G.; Ardelean, I.; Kimmich, R., The heterogeneous distribution of the liquid phase in partially filled porous glasses and its effect on self-diffusion. *Magnetic Resonance Imaging* **2007**, *25* (4), 453-456
27. Ardelean, I.; Farrher, G.; Kimmich, R., Effective diffusion in partially filled nanoscopic and microscopic pores. *Journal of Optoelectronics and Advanced Materials* **2007**, *9* (3), 655-660
28. Bogdan, M.; Nan, A.; Pop, C. V. L.; Barbu-Tudoran, L.; Ardelean, I., Preparation and NMR characterization of polyethyl-2-cyanoacrylate nanocapsules. *Applied Magnetic Resonance* **2008**, *34* (1-2), 111-119
29. Farrher, G.; Ardelean, I.; Kimmich, R., Time dependent diffusion in partially filled porous glasses. *Journal of Optoelectronics and Advanced Materials* **2008**, *10* (9), 2192-2198

30. Farrher, G.; Ardelean, I.; Kimmich, R., Time-dependent molecular diffusion in partially filled porous glasses with heterogeneous structure. *Applied Magnetic Resonance* **2008**, *34* (1-2), 85-99
31. Bogdan, M.; Parnau, A.; Badea, C.; Ardelean, I., Time-dependent diffusion studies on miglyol molecules confined in permeable polymeric capsules. *Applied Magnetic Resonance* **2008**, *34* (1-2), 63-69
32. Badea, C.; Mos, R. B.; Ciontea, L.; Ardelean, I., Low-Field Nuclear Magnetic Resonance Relaxometry as a Tool in Monitoring the Aging of Coating Solutions (Case Study: Barium Propionate Precursor Coating Solution). *Applied Magnetic Resonance* **2010**, *39* (4), 365-372
33. Nechifor, R.; Ardelean, I.; Mattea, C.; Stapf, S.; Bogdan, M., NMR relaxation dispersion of Miglyol molecules confined inside polymeric microcapsules. *Magnetic Resonance in Chemistry* **2011**, *49* (11), 730-733
34. Nechifor, R.; Bogdan, M.; Ardelean, I., The Size Distribution of Core Shell Polymeric Capsules as Revealed by Low-Field NMR Diffusometry. *Applied Magnetic Resonance* **2011**, *40* (2), 205-211
35. Simina, M.; Nechifor, R.; Ardelean, I., Saturation-dependent nuclear magnetic resonance relaxation of fluids confined inside porous media with micrometer-sized pores. *Magnetic Resonance in Chemistry* **2011**, *49* (6), 314-319
36. Simina, M.; Molnar, L.; Manea, D.; Ardelean, I., Monitoring the Air Influence on Cement-Lime Mortar Hydration Using Low-Field Nuclear Magnetic Resonance Relaxometry. *Applied Magnetic Resonance* **2012**, *43* (3), 443-450
37. Muncaci, S.; Ardelean, I., Probing the Pore Size of Porous Ceramics with Controlled Amount of Magnetic Impurities via Diffusion Effects on the CPMG Technique. *Applied Magnetic Resonance* **2013**, *44* (7), 837-848
38. Muncaci, S.; Ardelean, I., The Influence of the Magnetic Impurity Content on the Pore Size Distribution Determination via the DDIF Technique. *Applied Magnetic Resonance* **2013**, *44* (3), 365-373
39. Muncaci, S.; Mattea, C.; Stapf, S.; Ardelean, I., Frequency-dependent NMR relaxation of liquids confined inside porous media containing an increased amount of magnetic impurities. *Magnetic Resonance in Chemistry* **51** (2), 123-128 (2013)
40. Pop, A.; Badea, C.; Ardelean, I., The Effects of Different Superplasticizers and Water-to-Cement Ratios on the Hydration of Gray Cement Using T-2-NMR. *Applied Magnetic Resonance*, *44* (10), 1223-1234 (2013)
41. Badea, C.; Pop, A.; Mattea, C.; Stapf, S.; Ardelean, I., The Effect of Curing Temperature on Early Hydration of Gray Cement Via Fast Field Cycling-NMR Relaxometry. *Applied Magnetic Resonance*, *45* (12), 1299-1309 (2014)
42. S. Boboia, M. Moldovan, C. Prejmerean, C. Sarosi, A. Roman, I. Ardelean, Influence of Initiation System and Filler Ratio on the Properties of New Flowable Dental Composites, *Materiale Plastice* **52**, 104-108 (2015).
43. A. Pop and I. Ardelean, Monitoring the size evolution of capillary pores in cement paste during the early hydration via diffusion in internal gradients, *Cem. Conc. Res.* **77**, 76-81 (2015)
44. A. Pop, A. Bede, M.C. Dudescu, F. Popa, I. Ardelean, Monitoring the influence of aminosilane on cement hydration via low-field NMR relaxometry, *Appl. Magn. Reson.* **47**, 191-199 (2015)

45. S Boboia, M Moldovan, A Burde, C Sarosi, I Ardelean, C Alb, The effects of the curing regime and the composition on the absorption, solubility and the amount of residual monomers of dental flowable composites, *Journal of Optoelectronics and Advanced Materials* 17, 1487 – 1493 (2015)

C. Papers in referred journals and ISI proceedings

1. I. Ardelean and D.E.Demco, Double Quantum Cross-Polarization with Restricted Molecular Motion, *Rom. Journ. Phys.* 37, (8), 783- 792(1992).
2. I. Ardelean, and D.E. Demco, Dynamic Theory of Cross-Polarization under Fast Magic Angle Sample Spinning, *Rom. Journ. Phys.* 38, (7), 711- 716(1993).
3. D. E. Demco, and I. Ardelean,, Heteronuclear Coherence Transfer by Adiabatic Level-Crossing in the Rotating Frame", *Rom. Journ. Phys.* 39, (5-6), 449-464(1994).
4. D.E.Demco, and I. Ardelean,, Spatial Localization in the Process of Cyclic Adiabatic Heteronuclear J-Coherence Transfer, *Rom. Journ. Phys.* 39, (9-10), 685-694(1994).
5. D.E. Demco, and I. Ardelean, Spatially Localised Single Quantum Heteronuclear Polarization Transfer in Solids in the Presence of Radiofrequency Field Gradients", *Rom. Journ. Phys.* 40, (8-9), 859-876(1995).
6. D.E.Demco, and I. Ardelean, The Influence of Molecular Motion on the NMR Cross-Polarization in Solids, *Rom. Journ. Phys.* 41, (9-10), 462-473(1996).
7. D.E.Demco, and I. Ardelean, Homonuclear NMR Dipolar Decoupling and Recoupling in Rotating Solids", *Rom.Journ. Phys.* 41, (9-10), 703-725(1996).
8. I. Ardelean, G. Farrher, C. Mattea, R. Kimmich, Fluid diffusion in partially filled nanoscopic and microscopic porous materials, *Modern Magnetic Reson.*, 1451-1457(2006)
9. G. Farrher, I. Ardelean and R. Kimmich, Vapour contribution to the time dependence of the eff. diffusion coeff. in partially filled porous glasses, *Diffusion Fundamentals* 5, 9.1 -9.9(2007)
10. R. Nechifor, C. Badea and I. Ardelean, Nuclear magnetic resonance studies of liquids morphology inside partially saturated porous media, *Journal of Physics: Conference Series* 182, 012012 (2009)
11. R. E. Nechifor, and I Ardelean, Low-Field Nuclear Magnetic Resonance Relaxometry - A Tool in Monitoring the Melting Transition of Polymeric Capsules with Applications in Drug Delivery. *International Conference on Advancements of Medicine and Health Care Through Technology* **2011**, 36, 344-347
12. S. Boboia, M. Moldovan, I. Ardelean, Determination of Residual Monomers Resulting From the Chemical Polymerization Process of Dental Materials. *Processes in Isotopes and Molecules (Pim 2013)*, AIP Conf. Proc. 1565, 90-93 (2013)
13. S. Muncaci, S. Boboia, I. Ardelean, The Effect of Diffusion in Internal Gradients on Nuclear Magnetic Resonance Transverse Relaxation Measurements. *Processes in Isotopes and Molecules (Pim 2013)*, AIP Conf. Proc. 1565, 133-136 (2013)
14. A.Pop, C. Badea, I. Ardelean, Monitoring the Ettringite Formation in Cement Paste Using Low Field T-2-NMR. *Processes in Isotopes and Molecules (Pim 2013)*, AIP Conf. Proc. 1565, 141-144 (2013)
15. A Bede, A Pop, M Moldovan, I Ardelean, The influence of silanized nano-SiO₂ on the hydration of cement paste: NMR investigations, *AIP Conference Proceedings* 1700, 060009 (2015)

D. The most important conference presentations

1. **I. Ardelean**, S.Wonorahardjo and R.Kimmich, "Vapour diffusion contribution to molecular mobility inside Vycor porous glass" 6th International Conference on Magnetic Resonance in Porous Media, Ulm, Sept 8-12, 2002 (poster)
2. **I. Ardelean**, C. Mattea, G. Fahrher, R. Kimmich, Molecular diffusion in partially filled porous

- media: NMR investigations, The AMPERE XI NMR SCHOOL, Zakopane (Poland) June 1-6, 2003 (oral presentation)
3. **I. Ardelean**, C. Mattea, G. Farrher, R. Kimmich; “NMR studies of Diffusion in Partially Filled Porous Media”, AMPERE XI NMR SCHOOL, June 6-11, 2004, Zakopane, Poland (**invited speaker**).
 4. **I. Ardelean**, G. Farrher, C. Mattea, and R. Kimmich; “NMR study of the vapour phase contribution to diffusion in partially filled silica glasses with nanometer and micrometer pores”, 7th International Conference on Magnetic Resonance in Porous Media, July 4-8, 2004. Ecole Polytechnique, Palaiseau, France (oral presentation).
 5. **I. Ardelean**, G. Farrher, C. Mattea, and R. Kimmich, “NMR investigation of the vapour contribution to diffusion in porous media partially filled with liquids”, Euromar/EENC2005, Conference, July 3-8, 2005, Veldhoven, The Netherlands (**invited speaker**)
 6. **I. Ardelean**, Time dependent effective diffusion in partially filled mesoscopic pores from hundred microseconds to hundred milliseconds, 8 th Bologna Conference on NMR in Porous Media, 2006, Bologna (**invited speaker**)
 7. **I. Ardelean**, G. Farrher, R. Kimmich, Molecular dynamics under confinement in partially filled nano- and micro- structured samples: NMR investigations, XXII Conference on Radio and Microwave Spectroscopy RAMIS 2007, April 22- 25, Bedlewo-Poznan, Poland (**invited speaker**).
 8. **I. Ardelean**, M. Bogdan, C. Badea, A. Parnau, NMR diffusion and relaxation studies of molecules confined inside core-shell polymeric capsules, 9th Bologna Conference on Magnetic Resonance in Porous Media, 13-17 Iulie, 2008 Boston, USA (poster)
 9. **I. Ardelean**, Nuclear Magnetic Resonance investigations on partially saturated porous media, 11th Central and Eastern European Bruker Users Meeting, October 4-6, 2009, Cluj-Napoca (**invited speaker**),
 10. **I. Ardelean** M. Simina, S. Muncaci, Relaxation of polar and nonpolar molecules confined inside partially saturated porous media with ferromagnetic impurities, 10th Bologna Conference on Magnetic Resonance in Porous Media, 12-16 Sept. 2010, Leipzig, Germania (poster)
 11. I. Ardelean, S. Muncaci, C. Mattea, S. Stapf, NMR relaxation of fluids confined inside porous media with magnetic impurities, 8th Conference on FFC NMR Relaxometry, 23-25 May 2013, Turin, Italy (**invited speaker**)
 12. I. Ardelean, Monitoring the temperature effects on early stage cement hydration via Fast Field Cycling NMR relaxometry, Ampere NMR School, 22-28 June 2014, Zakopane, Poland (**invited speaker**)