



Lista de lucrari

Conf. Dr. Radu Fechete

intocmita conform criteriilor Art. 15 din Monitorul Oficial al Romaniei, Partea I,
Nr. 755/27.X.2011

a) Lista de 10 lucrari relevante pentru realizare profesionale

1. D. Moldovan, R. Fechete, D. E. Demco, E. Culea, B. Blümich, V. Herrmann, M. Heinz, *Macrom. Chem. Phys.*, **211**, 1579 (2010).
2. D. Moldovan, R. Fechete, D. E. Demco, E. Culea, B. Blümich, V. Herrmann, M. Heinz, *The heterogeneity of segmental dynamics of filled EPDM by ¹H transverse relaxation NMR*, *J. Magn. Reson.*, 208 156-162 (2011).
3. R. I. Chelcea, R. Fechete, E. Culea, D. E. Demco and B. Blümich, *Distributions of transverse relaxation times for soft-solids measured in strongly inhomogeneous magnetic fields*, *J. Magn. Reson.*, **196**, 178-190 (2009).
4. Marko Bertmer, Dan E. Demco, Mingfei Wang, Claudiu Melian, Ramona I. Marcean-Chelcea, Radu Fechete, Maria Baias, Bernhard Blümich, *Segmental dynamic heterogeneity of short-chained poly(dimethylsiloxane) by 1H spin-diffusion NMR*, *Chem. Phys. Letter*, **431**, 404-409 (2006).
5. C. Filipoi, D. E. Demco, X. Zhu, R. Vinokur, O. Conradi, R. Fechete, M. Möller, *Channel orientation anisotropy in perfluorosulfonic acid/SiO₂ composite proton exchange membranes: Water self-diffusion study using NMR*, *Chem. Phys. Lett.*, 513, 251–255 (2011).
6. R. Fechete, D. Moldovan, D. E. Demco and B. Blümich, *Laplace inversions applied to multi-component T₂-T₂ exchange experiments*, *Diffusion Fundamentals*, **10** 14.1 - 14.3 (2009).
7. Peter Rottengatter, Holger Thern, Radu Fechete, Martin Blanz, Thomas Kruspe, *Reduction of motion artifacts in NMR*, United State Patent, US 7,180,287 B2, Feb. 20 (2007).
8. R. Fechete, D.E. Demco, B. Blümich, U. Eliav, G. Navon, *Self-diffusion anisotropy of water in sheep Achilles tendon*, *NMR in Biomedicine*, **18**, 577-586 (2005).



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10. Claudiu Melian, Dan E. Demco, Monica Istrate, Andreea Balaceanu, Dumitrita Moldovan, Radu Fechete, Crisan Popescu, Bernhard Blümich, and Martin Möller, *Morphology and side chain dynamics in hydrated hard α -keratin fibres by ¹H solid-state NMR* Chem. Phys. Lett. 480 300–304 (2009).

b) Teza de doctorat

Radu Fechete, *NMR of Elastomers and Biological tissues, Teza de Doctorat*, Rheinisch-Westfälischen Technischen Hochschule Aachen, Fakultät für Mathematik Informatik und Naturwissenschaften, (2004).

c) Patente

1. Bluemich Bernhard, Bruder Michael, Anferov Vladimir, Anferova Sophia, Fechete Radu, Klein Martin, Krause Karl-Heinz, Rabkin Michael, Stangenberg Juergen, *NMR-Sonde zur Materialanalyse*, PCT Int. Appl., (Germany), 37 pp. CODEN: PIXXD2 WO 2003087861 A1 20031023, (2003).
2. Radu Fechete, Martin Blanz, Holger Thern, Thomas Kruspe, Peter Rottergatter, *Diminution d'artefacts dus au mouvement en RMN*, Canadian intellectual Properties CA 2 565 587 17 Nov. (2005).
3. Blumich Bernhard, Bruder Michael, Klein Martin, Krause Karl-Heinz, Rabkin Michael, Stangenberg Juergen, Anferov Vladimir, Anferova Sophia, Fechete Radu, *NMR probe for material analysis*, United States Patent, 7,095,230, B2, 22 Aug. (2006).
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d) Carti

1. R. Fechete, *Nuclear Magnetic Resonance of Elastomers and Biological Tissues*, Editura Risoprint, 242 pg, ISBN 978-973-751-775-3 (2008).
2. Radu Fechete, *Elemente de fizica pentru ingineri*, Editura UT Press, 227 pg., ISBN 978-973-662-375-2 (2008).
3. Radu Fechete, Dan E. Demco, Dumitrita C. Moldovan, Ramona I. Chelcea, Eugen Culea, *Rezonanta Magnetica Nucleara: Metode clasice si Moderne*, Editura Risoprint, Cluj-Napoca, ISBN 978-973-53-0441-6, pg. 260 (2010).

e) Articole in extenso publicate in reviste din fluxul stiintific international principal

1. A. Lupulescu, R. Fechete, D.E. Demco and O. Cozar, *Single-Quantum NMR Spinning-Side-Band Patterns for Spin-3/2 System*, Acta Physica Polonica A, **92**(6), (1997).
2. R. Ordean, R. Fechete, C. Filip, O. Pana, L.V. Giurgiu, C. Kessler, M. Mehring *Charge Delocalisation in Quasi-One-Dimensional Molecular Conductor KCP as seen by ESR*, Roum. J. Phys. **43**, 481-487 (1998).
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8. R. Fecete, D. E. Demco, B. Blümich, U. Eliav, and G. Navon, *Anisotropy of Collagen Fiber Orientation in Sheep Tendon by ^1H Double-Quantum-Filtered NMR Signals*, J. Magn. Reson., **161** (3), (2003).
9. B. Blümich, V. Anferov, S. Anferova, M. Klein, R. Fecete, *A NMR-MOUSE[®] for Analysis of Thin Objects*, Macromolecular Materials & Engineering, 288(4), 312-317 (2003)
10. D.E. Demco, R. Fecete, and B. Blümich, *Residual van Vleck moments in elastomers by accordion magic sandwich*, Chem. Phys. Lett., 375, 406-412 (2003).
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13. M. Todica, R. Fecete, and B. Blümich, *Selective NMR excitation in strongly inhomogeneous magnetic fields*, J. Magn. Reson., **164** 220-227 (2003).
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16. R. Fecete, D.E. Demco, and B. Blümich, *Order parameters of orientation distributions of collagen fibers in tendon by Multipolar spin states filtered NMR signals*, NMR in Biomedicine, **16**, 8, 479-483 (2003).
17. R. Fecete, D.E. Demco, and B. Blümich, *Enhanced sensitivity to residual dipolar couplings by high-order multiple-quantum NMR*, J. Magn. Reson., **169**, 19-26 (2004).
18. B. Blümich, D.E. Demco, R. Fecete, *Auslegung mobiler NMR-Sonden zur zerstörungsfreien Prüfung*, Computational Chemistry: Berichte aus der RWTH-Aachen, **2**, 28-31 (2004).
19. S. Anferova, V. Anferov, M. Adams, R. Fecete, G. Schröder and B. Blümich, *A temperature control unit for operation with the NMR-MOUSE[®]: application to thermo-oxidative aging of elastomers*, App. Magn. Reson., **27**, 3-4, 1-10 (2005).



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26. I. Cosma, E. Culea, R. Fechete and S. Nicoara, *Statistics of interatomic Ni-Ni bonds in Ni-based ternary solid solutions with non magnetic elements and their magnetic behavior*, *Modern Phys. Lett. B*, Vol. **23**, No. 9 1199-1206 (2009).
27. Claudiu Melian, Dan E. Demco, Monica Istrate, Andreea Balaceanu, Dumitrita Moldovan, Radu Fechete, Crisan Popescu, Bernhard Blümich, and Martin Möller, *Morphology and side chain dynamics in hydrated hard α -keratin fibres by 1H solid-state NMR* *Chem. Phys. Lett.* 480 300–304 (2009).
28. D. Moldovan, R. Fechete, D. E. Demco, E. Culea, B. Blümich, V. Herrmann, M. Heinz, *Heterogeneity of Nanofilled EPDM Elastomers Investigated by Inverse Laplace Transform 1H NMR Relaxometry and Rheometry*, *Macromol. Chem. Phys.*, 211, 1579-1594 (2010).
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32. C. I. Horvat, X. Zhu, D. Türp, R. A. Vinokur, D. E. Demco, R. Fechete, O. Conradi, A. Graichen, D. Anokhin, D. A. Ivanov, M. Möller, *Perfluorosulfonic acid ionomer – silica composite membranes prepared using hyperbranched polyethoxysiloxane for polymer electrolyte membrane fuel cells*, Int. J. Hyd. Energy, 37 (19), 14454–14462 (2012).
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f) Articole in extenso aparute in lucrari ale principalelor conferinte internationale de specialitate

1. M. Butnaru, R. Marcean, O. Cozar, I. Bratu and R. Fechete, *The behaviour of some butadiene elastomers submitted to the degrading action of climatic factors studied by photoacoustic technique*, Studia Babes-Bolyai, Physica, L **4b**, 633-636 (2005).
2. M. Butnaru, R. Marcean, O. Cozar, I. Bratu and R. Fechete, *The action of marine climate on some polymers*, Studia Babes-Bolyai, Physica, L **4b**, 637-640 (2005).
3. M. Butnaru, R. Marcean, O. Cozar, I. Bratu and R. Fechete, *Application of NMR techniques in studying the dynamics of some polymers*, Studia Babes-Bolyai, Physica, L **4b**, 641-645 (2005).
4. M. Butnaru, R. Marcean, O. Cozar, I. Bratu and R. Fechete, *Application of an IR techniques in studying the structure of some polymers*, Studia Babes-Bolyai, Physica, L **3**, 264-270 (2005).
5. R. Marcean-Chelcea, R. Fechete, E. Culea, D.E. Demco, B. Blümich, *Segmental Order and Dynamics of Polymer Networks Using Dipolar Correlation Effect Measured in Low Field NMR*, American Institute of Physics CP899, 561 (2007).
6. L. Pop, R. Fechete, P. Pascuta, S. Rada, M. Culea, M. Bosca, R. Chelcea, E. Culea, *Spectroscopic and magnetic properties of $xR_2O_3(1-x)(0,15Bi_2O_3-0,85TeO_2)$ glasses*, Conf. Int. Fizica TIM-06, Timisoara, pg.61 (2006).



7. L. Pop, E. Culea, M. Culea, S. Rada, P. Pascuta, R. Fechete, M. Bosca, R. Chelcea, Structural properties of $\text{Bi}_2\text{O}_3\text{-PbO}$ glasses doped with rare-earth ions, Conf.Int.Fizica TIM-06, Timisoara, pg. 68 (2006).
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9. D. Moldovan, R. Fechete, D. E. Demco, E. Culea and B. Blümich, *Monte - Carlo simulations of the two-dimensional NMR T_2 - T_2 exchange of fluids in porous media*, Diffusion Fundamentals, **10** 20.1 - 20.3 (2009).
10. R. Fechete, D. Moldovan, D. E. Demco and B. Blümich, *Laplace inversions applied to multi-component T_2 - T_2 exchange experiments*, Diffusion Fundamentals, **10** 14.1 - 14.3 (2009).
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12. M. Pop, S. Traian, L. Daraban, R. Fechete, *^{13}C NMR study of gamma irradiated polystyrene*, Studia Univ. Babes-Bolyai, Chemia (3), 129-134, (2011).
13. N. Cioica, R. Fechete, O. Cozar, C. Cota, Investigate the effect of some plasticizers on the macrostructure of corn starch used to obtain biodegradable packaging, INMATEH - Agricultural Engineering, Volume 36, Issue 1, 2012, Pages 69-70, (2012).

g) Alte lucrari si contributii stiintifice

Prezentari orale la colocvii si conferinte internationale

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5. B. Blümich, S. Anferova, R. Fechete, M. Wang, I. Blumenkamp-Höfges, *Thermo-Oxydative Aging of Elastomers by NMR*, Statusseminar BMBF "Forschung für die Umwelt", Hannover, Germany, July 9, (2003).
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8. R. Fechete, 2D Laplace Inversion applied in T_2 - T_2 exchange experiments, Seminar științific susținut în departamentul de Chimie Tehnică și Macromoleculare, ITMC și a grupului de cercetare MARC a prof. Blümich, a Universității RWTH-Aachen, Germania, 5 Noiembrie, 14,30-15,30 (2007).
9. Radu Fechete, Nano-structured Biomaterials: A NMR study of collagen and keratin, 2nd Transylvanian NMR Workshop in Cluj-Napoca September 18 -21, (2009).
10. R. Fechete, The use of Laplace-like transform in studying the heterogeneities in elastomers, Seminar științific susținut în departamentul de Chimie Tehnică și Macromoleculare, ITMC și a grupului de cercetare MARC a prof. Blümich, a Universității RWTH-Aachen, Germania, 8 Iunie, 14,20-15,30 (2010).

Postere prezentate la colocvii și conferințe internaționale

1. K. Hailu, R. Fechete, D. E. Demco, B. Blümich, *Anisotropy of 1H Magnetization Transverse Relaxation in Strained Elastomers by the NMR-MOUSE*, NATO ARW, Magnetic Resonance in Colloid and Interface Science, St. Petersburg, Russia, June 26-30, (2001).



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3. R. Fechete, D.E. Demco, and B. Blümich, *Segmental order and chain dynamics of polymer networks Using multi-spin dipolar correlation effect*, The 16th European Experimental Nuclear Magnetic Resonance Conference in Prague, June 9-14, (2002).
4. Martin Klein, V. Anferov, S. Anferova, R. Fechete, M. Adams, F. Casanova and B. Blümich, *The Bar-Magnet NMR-MOUSE[®]*, Colloquium on Mobile NMR Vaals, The Netherlands, October 7-9, (2002).
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10. B. Blümich, S. Anferova, J. Arnold, G. D. Rata, R. Pechnig, R. Fechete, C. Clauser, *Feasibility Study of a Mobile NMR Scanner for Porosity Measurements on Deep Sea Ocean Drilling Core Samples*, Conference on porous media, Paris (2004)
11. M. Butnaru, R. Marcean, O. Cozar, I. Bratu and R. Fechete, *The behaviour of some butadiene elastomers submitted to the degrading action of climatic factors studied by photoacoustic technique*, PIM International Conference on Isotopic and Molecular Processes, Cluj-Napoca, Romania, Sept. 22-24 (2005).



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16. I. Cosma, E. Culea, S. Nicoara, R. Fechete, *Statistical distribution of extra-electrons at the nickel atoms and the mean magnetic moment in i-rich solid solutions with non-magnetic elements*, Fourth International Conference in Materials and Manufacturing Technologies, Cluj-Napoca, Romania, 21-23 September (2006).
17. R. Fechete, R. I. Chelcea, E. Culea, D. E. Demco and B. Blümich, Dipolar correlation functions of soft solids by NMR in strongly inhomogeneous magnetic fields, European Magnetic Resonance Conference, EUROMAR, Tarragona, Spania 1-6 Iulie (2007).
18. R. I. Chelcea, R. Fechete, E. Culea, D. E. Demco and B. Blümich, Dynamic heterogeneities in soft solids by NMR in strongly inhomogeneous magnetic fields , European Magnetic Resonance Conference, EUROMAR, Tarragona, Spania 1-6 Iulie (2007).
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20. D. Moldovan, R. Fechete, D. E. Demco, E. Culea, and B. Blümich, Monte-Carlo simulations of the two-dimensional NMR T_2 - T_2 exchange of fluids in porous media, 9th International Bologna Conference, Magnetic Resonance in Porous Media, MRPM9, Cambridge MA, SUA, 13-17 Iulie (2008).



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24. D. Corpodean, R. Fecete, D. E. Demco, Characterization of the ¹H Double Quantum Fourier and Laplace Spectra of Aged Natural Rubber Samples, Conferinta Internationala EUROMAR 2012, Dublin, Irlanda, 1-5 Iulie (2012).
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Conf. Dr. Radu Fecete