



Name: Josef BARTOŠ

Affiliation:

Polymer Institute
Slovak Academy of Sciences

Dúbravská cesta 9
845 41 Bratislava 45
Slovakia

Education:

1973 - 1978

MS from the Slovak Technical
University, Department of Physical
Chemistry, Bratislava

1979 - 1983

PhD. studies at the Polymer
Institute of SAS, Bratislava

2003 – D.Sc. Grade equivalent to
Research Prof.

Experiences:

1978 - 1984

Polymer Institute of the Slovak
Academy of Sciences, Bratislava

1984 - 1991

Research Institute for Plastics and
Technology, Zlín,
Head of Thermophysical
Laboratory

1991 - present

Polymer Institute of the Slovak
Academy of Sciences, Bratislava

Principal research scientist and

Head of the Group of Structure and
physico-chemical properties of
polymers

Scientific Interests:

Structure, dynamics and transport
in organic condensed materials,
especially polymers, as studied by
external probing techniques
such as *electron spin resonance
spectroscopy (ESR)* and *positron
annihilation lifetime spectroscopy
(PALS)*, as well as internal
probing ones: *differential scanning
calorimetry (DSC)* and *dielectric
relaxation spectroscopy (BDS)*

Study and Research Stays:

1988 - 12 months

a Humboldt fellowship at
Deutsches Kunststoff Institut,
Darmstadt, Germany

1992 - 6 months

a Humboldt fellowship at
Deutsches Kunststoff
Institut, Darmstadt, Germany

2000 – 2 months

a Humboldt fellowship at
Physikalisches Institut, Universität
Bayreuth, Germany

2001 – 1 month

a DFG research stay at
Physikalisches Institut, Universität
Bayreuth, Germany

2002 – 2 months

a research stay at
Physikalisches Institut, Universität
Bayreuth, Germany

2003 – 1 month
a NSF research stay at
U.S. Naval Academy, Annapolis
U.S.A.

2004 – 1 month
a NSF research stay at
U.S. Naval Academy, Annapolis
U.S.A.

2005 – 1 month
a NSF research stay at
U.S. Naval Academy, Annapolis
U.S.A.

2006 – 3 months
a Humboldt fellowship at
Physik Institute V, Universität
Augsburg, Germany

2008 - 1 month
a DAAD research stay at
Physik Institute V, CEKM,
Universität Augsburg, Germany

- 1.5 months
an IAA research stay at
CSIC-UPV/EHU and DIPC
San Sebastian, Spain

2009 - 1 month
a DAAD research stay at
Physik Institute V, CEKM,
Universität Augsburg, Germany

- 1 month
an IAA research stay at
CSIC-UPV/EHU and DIPC
San Sebastian, Spain

2011 - 1 month
a research stay at
Physik Institute V, CEKM,
Universität Augsburg, Germany

- 1 month
an IAA research stay at
CSIC-UPV/EHU and DIPC
San Sebastian, Spain

- 3 weeks
a AvH research stay at Universität
Halle, Halle, Germany

2012 - 1 month
an European Soft Matter
Infrastructure (ESMI) Project 2012
of FP7 EU research stay at CSIC-
UPV/EHU, San Sebastian, Spain

2013 - 1 month
an European Soft Matter
Infrastructure (ESMI) Project 2013
of FP7 EU research stay at CSIC-
UPV/EHU, San Sebastian, Spain

2014 – 1 month
an European Soft Matter
Infrastructure (ESMI) Project 2014
of FP7 EU research stay at CSIC-
UPV/EHU, San Sebastian, Spain

- 1 month
a DAAD research stay at
Physik Institute V, CEKM,
Universität Augsburg, Germany

2015 - 1 month
an European Soft Matter
Infrastructure (ESMI) Project 2015
of FP7 EU research stay at CSIC-
UPV/EHU, San Sebastian, Spain

- 1 month
a DAAD research stay at
Physik Institute V, CEKM,
Universität Augsburg, Germany

Scientific publications:

1 chapter in encyclopedia book
2 chapters in scientific books
82 papers in SCI journals
- see attachment

SCI - PUBLICATIONS:

1980

1. Miertuš, S., Bartoš, J.
Application of solvation model to quantum-mechanical study of influence of solvation on the chemical process $NH_3 + HF \rightarrow NH_4^+ + F^-$.
Coll.Czech.Chem.Comm. **45**, 2308 (1980)
2. S. Miertuš, S., Kyseľ, O., Bartoš, J., Urban, J.
Primenenje solvatonnoj modeli dlja izučeniya vlijanija solvataciji na reakciju $F^- + CH_3 \rightarrow [CH_3F_2]^-$.
Theor.Eksp.Chim. **26**, 829 (1980)

1982

3. Bartoš, J.:
Mechanism of macroradical reactions in solid polyethylene generated by radiolysis.
Chem. Listy **76**, 463 (1982)
4. Bartoš, J., Tiňo, J.:
Study of macroradical reactivity in polystyrene by means of ESR and stochastic models for diffusion-controlled reactions.
Chem. Papers **36**, 213 (1982)

1984

5. Bartoš, J., Tiňo, J.
Study of the mechanism of macroradical reactions in solid polymers. 1. Molecular aspects of reactivity and activation energy approach to reactivity.
Polymer **25**, 274(1984)

1985

6. Bartoš, J., Klimová, M., Szöcs, F.
A Study of the mechanism of decay of allyl macroradicals in crosslinked polyethylene.
Coll.Czech.Chem.Comm. **50**, 1470 (1985)
7. Bartoš, J., Tiňo, J.:
A Study of the mechanism of decay of alkyl macroradicals in isotactic polypropylene.
Coll.Czech.Chem.Comm. **50**, 1391 (1985)
8. Bartoš, J.
A Study of the decay mechanism of alkyl macroradicals in polyisobutylene.
Coll.Czech.Chem.Comm. **50**, 1699 (1985)

1986

9. Bartoš,J., Tiňo,J.
Study of the mechanism of macroradical reactions in solid polymers: 2. Decay of alkyl macroradicals in linear polyethylene at low temperatures.
Polymer **27**, 281 (1986)
10. Bartoš, J.
Analysis of mechanism of the catalytic effects of hydrogen on the decay of alkyl macroradicals in polyethylene.
Coll.Czech.Chem.Comm. **51**, 1279 (1986)
11. Bartoš, J., Vacek,K.
DSC study of the melting of irradiated poly(vinylidene fluoride).
Rad.Phys.Chem. **28**, 505 (1986)

1987

12. Miertuš, S., Bartoš, J., Trebatická.:
Dependence of atomic radii and volumes on the electron distribution in solute molecule on solute-solvent interaction
J.Mol.Liq. **33**, 139-159(1987)

1988

13. Bartoš, J., Hloušková, Z.:
Study of the conformational - segmental mobility in poly(ethylene) and poly(propylene) by means of spin-probe method.
Coll.Polym.Sci. **266**, 624 (1988)
14. Klimová,M., Szöcs,F., Bartoš,J., Vacek,K., Pallanová,M.:
Kinetika zániku makroradikálov v radiačne zosietenom poly(vinylidfluoride).
Radioizotopy **29**, 435 (1988)

1989

15. Bartoš,J., Hloušková,Z.:
Study of the segmental mobility in polyisobutylene by means of spin probe method.
Europ.Polym.J. **25**, 21(1989)
16. Klimová, M., Szöcs,F., Bartoš,J., Vacek,K., Pallanová,M.:
ESR and DSC study of the radiation crosslinking effect on macroradical decay in PVDF.
J.Appl.Polym.Sci. **37**, 3449-3458 (1989)

1990

17. Bartoš, J., Müller, J., Wendorff, J.H.:
Physical aging of isotropic and anisotropic polycarbonate.
Polymer **31**, 1678-1684 (1990)

1992

18. Bartoš, J., Szöcs, F., Klimová, M., Müller, J.
Study of the influence of physical aging and rejuvenation on macroradical reactivity in amorphous polycarbonate.
Polymer **33**, 3536 (1992)
19. Bartoš J, Hloušková Z, Vulpius G.:
Segmental size of poly(ethylene-terephthalate) determined by optical birefringence and ESR spin probe method.
Colloid and Polymer Science **270/3** 229-233 (1992)

1993

20. Bartoš, J., Hloušková, Z.:
Free volume microstructure and spin-probe dynamics in solid polymers.
Polymer **34**, 4570 - 4573 (1993)

1994

21. Krištiak, J., Bartoš, J., Krištiaková, K., Šauša, O., Bandžuch, P.:
Free volume microstructure of amorphous polycarbonate at low temperatures determined by positron annihilation lifetime spectroscopy.
Phys.Rev. **B49**, 6601 - 6607 (1994)

1995

22. Bartoš, J., Klimová, M., Szöcs, F.:
Study of the influence of physical aging on macroradical decay in polymethyl methacrylate.
Coll.Polym.Sci. **273**, 766-771 (1995)

1996

23. Bartoš, J.:
Free volume microstructure of amorphous polymers at glass transition temperatures from positron annihilation spectroscopy data.
Coll.Polym.Sci. **274**, 14-19 (1996)

24. Bartoš, J., Klimová, M.:
A relationship between the macroradical decay kinetics and α -segmental dynamics in glassy amorphous polymers.
J.Polymer.Sci. A Polym.Chem. **34**, 1741 -1746 (1996)
25. Bartoš, J., Krištiaková, K., Šauša, O., Krištiak, J.:
Free volume microstructure of TMPC at low temperatures studied by PALS. A comparison with PC.
Polymer **37**, 3397-3403 (1996)
26. Krištiak, J., Šauša, O., Bandžuch, J., Bartoš, J.:
On the expansion of main chain polymer determined by positron annihilation spectroscopy
J.Radioanal.&Nucl.Chem. **210**, 563 (1996)
27. J. Bartoš, M. Klimová, P. Mach
Study of the influence of chemical substitution on macroradical decay in polycarbonates
Polymer International **41**(1), 67–72 (1996).

1997

28. Kanaya, T., Kaji, K., Bartoš, J., Klimová, M.:
On the onset of the fast process in amorphous poly(propylene) by QENS and ESR techniques.
Macromolecules **30**, 1107-1110 (1997)
29. Bartoš, J., Krištiak, J., Kanaya, T.:
Free volume microstructure and microscopic dynamics in amorphous polymers.
Physica B **234-236**, 437 - 438 (1997)
30. Bartoš, J., Bandžuch, P., Šauša, O., Krištiaková, K., Krištiak, J., Kanaya, T., Jenninger, W.:
Free volume microstructure and its relationship to the chain dynamics in cis - 1,4 poly-(butadiene) as seen by positron annihilation lifetime spectroscopy.
Macromolecules **30**, 6906-6912 (1997)
31. Krištiak, J., Bartoš, J., Šauša, O., Bandžuch, P.:
The expansion of free volume in main chain polymers seen by positron annihilation lifetime spectroscopy and the Vogel temperature.
Mat.Sci.Forum **255-257**, 35 – 39 (1997)
32. Szöcs, F., Klimová, M., Bartoš, J.:
An ESR study of the influence fatigue on the decay of free radicals in γ -irradiated polycarbonate.
Polym.Degrad.Stab. **55**, 233 – 235 (1997)

1998

33. Bartoš, J., Krištiak, J.:
Free volume aspects of the strong - fragile classification of polymer liquids.
J.Non - Cryst.Solids **235-237**, 293-295 (1998)
34. Bartoš, J., Klimová, M., Kanaya, T., Kaji, K.:
Microscopic dynamic aspects of the free radical acceleration in sub- T_g region of atactic Poly(propylene)
Polymer **39**, 1107-1112 (1998)
35. Bartoš, J., Kanaya, T., Kaji, K.
Free radical decay and local chain dynamics around the glass - liquid transition in trans-1,4-polychloroprene as studied by ESR and QENS methods
Acta Polym. **49**, 715-719 (1998)
36. Bartoš, J., Krištiak, J.:
Free volume from PALS method and its relationships to the various microscopic and macroscopic dynamic properties of OTP.
J.Phys. – Cond.Mat. **11/10A** A371 - 377 (1999)
37. Krištiak, J., Šauša, O., Bandžuch, P., Zrubcová, J., Bartoš, J.:
Does positronium feel dynamics of polymer chains?
Acta Phys.Polonica **A95**, 596 - 604 (1999)
38. Kanaya T., Tsukushi T., Kaji K., Bartoš J., Krištiak J.
Microscopic basis of free volume concept as studied by quasi-elastic neutron scattering and positron annihilation spectroscopy.
Phys.Rev. **E60**, 1906 - 1912 (1999)
39. J. Bartoš, M. Klimová, P. Mach
Study of the influence of chemical substitution on macroradical decay in polycarbonates
Polymer International **41**(1), 67–72 (1996).

2000

40. Bartoš, J.: **Positron Annihilation Spectroscopy of Polymers and Rubbers**
In *Encyclopedia of Analytical Chemistry 2000* R.A.Meyers (Ed) Wiley & Sons,
Chichester 2000 p.7968 - 7987.
41. Kaholek, M., Hrdlovič, P., Bartoš, J.:
Singlet probes based on coumarines derivatives substituted in position
3. Spectral properties in solution and polymer matrices.
Polymer **41**, 991 – 1002 (2000)

42. Bartoš, J., Krištiak, J.
A Phenomenological Model of Volumetric and Free Volume Hole Properties of Supercooled Liquids. The OTP case.
 J.Phys.Chem. **B104**, 5666 - 5673 (2000)
43. Bartoš, J., Krištiak, J., Šauša, O., Bandžuch, P., Zrubcová, J.:
Experimental Free Volume Aspects of the Polymer Rheology as Obtained by Positron Annihilation Lifetime Spectroscopy
 Macromol.Symp. **158**, 111-123 (2000)
44. Kanaya, T., Tsukushi, I., Kaji, K., Bartoš, J., Krištiak, J.
Heterogeneity of amorphous polymers as studied by quasi-elastic neutron scattering and positron annihilation lifetime spectroscopy.
 J.Phys. IV-France **10**, 317-320 (2000)
45. Šauša O., Zrubcová J., Bandžuch P., Krištiak J., Bartoš J.
A study of time dependence of ortho-positronium annihilation in a poly(butadiene) at different temperatures: A meaning of I_3 parameter
 Radiation Physics and Chemistry, 58 (5-6), 479-483 (2000)

2001

46. Bartoš, J., Šauša, O., Krištiak, J., Blochowicz, T., Rössler, E.:
Free volume microstructure of glycerol and its supercooled liquid state dynamics
 J.Phys.-Cond.Matt. **13**, 11 473 – 11 484 (2001)
47. Bartoš, J., Urban, J., Mach, P., Krištiak, J.:
Free volume from PALS and atomistic simulations: The OTP case.
 Mat.Sci.Forum **363-365**, 294- 296 (2001)
48. Krištiak, J., Bandžuch, P., Šauša, O., Zrubcová, J., Bartoš, J.:
The Absolute Free Volume Fraction in Polymers from the Positron Lifetime Measurements
 Mat.Sci.Forum **363 – 365**, 269-271 (2001)

2002

49. Bartoš, J., Šauša, O., Bandžuch, P., Zrubcová, J., Krištiak, J.:
Free volume factor in supercooled liquid dynamics
 J.Non-Cryst.Solids **307-310**, 417 - 425 (2002)

2004

50. Bartoš, J., Šauša, O., Krištiak, J.:
Annihilation Response of the Ortho-Positronium Probe from Positron Annihilation Lifetime Spectroscopy and its Relationships to the Free Volume and Dynamics of Glass-Forming Systems
Chapter in Advanced Research Workshop (ARW) NATO Series: **Nonlinear Dielectric Phenomena in Complex Liquids**, (Eds.) Rzoska R.J., Zhelezny, V.P. Kluwer Acad. Publ., Dordrecht, The Netherlands, 2004 p. 289-305.

2005

51. Bartoš, J. Šáněřřová, J., Šauša, O., Pustková, P. Krištiak, J. Málek, J.:
Dilatometric and positron annihilation lifetime spectroscopic studies of amorphous and partially crystalline selenium.
J.Non-Cryst.Solids **351**, 1082 - 1088 (2005)
52. Račko, D., Chelli, R., Cardini, G., Bartoš, J., Califano, S.:
Insights into positron annihilation lifetime spectroscopy by molecular dynamics simulations. Free volume calculations for liquid and glassy glycerol.
Eur.Phys.J. **D 32**, 289 - 297 (2005)
53. Bendler, J., Fontanella, J.J., Shlesinger, M.F., Bartoš, J., Šauša, O., Krištiak, J.:
Free volume dynamics in supercooled liquids and glasses.
Phys.Rev. **E 71** 031508-1 – 031508-10 (2005)
54. Bartoš, J., Šauša, O., Račko, D., Krištiak, J., Fontanella, J.J.:
Positron annihilation lifetime response and relaxation dynamics by the broadband dielectric spectroscopy in glycerol
J.Non-Cryst.Solids **351** 2599 - 2604 (2005)

2006

55. Bartoš, J., Andreozzi, L., Faetti, M., Šauša, O., Račko, D., Krištiak, J.:
Free volume in poly(propylene glycol) and its relationships to spin probe reorientation
J.Non-Cryst.Solids **352** 4785 – 4789 (2006)
56. Pawlus, S., Bartoš, J., Šauša, O., Krištiak, J., Paluch, M.:
PALS and DS studies on diethyl phthalate: Phenomenological correlations and microscopic analyses in terms of the extended free volume model by Cohen – Grest.
J.Chem.Phys. **124** 104505 - 104510 (2006)

2007

57. Bartoš, J., Račko, D., Šauša, O., Krištiak, J.:
Positron annihilation lifetime spectroscopy and atomistic modeling - effective tools for the disordered condensed system characterization
Chapter in Advanced Research Workshop (ARW) NATO Series: **Soft Matter under Exogenic Impacts. Fundamentals and Emerging Technologies**, S.J. Rzoska, V.A. Mazur (Eds), Springer - Verlag Berlin, Germany 2007 p.113 - 131.
58. Račko, D., Chelli, R., Cardini, G., Califano, S. and Bartoš, J.:
Free volume microstructure from molecular dynamics simulations and its relationships to the PALS data
Theor.Chem.Account **118** 443 - 448 (2007)
59. Bartoš, J., Alegría, A., Šauša, O., Tyagi, M., Gómez, D., Krištiak, J. and Colmenero, J.:
Positron annihilation lifetime response and broadband dielectric relaxation spectroscopy: Diethyl phthalate
Phys.Rev. **E76** 031503-1-9 (2007)
60. Švajdlenková, H. and Bartoš, J.:
Spin probe reorientation and its relationships to free volume and relaxation dynamics in glass-formers: The case of Poly(isobutylene)
Trends in Applied Spectroscopy **6** 57 – 67 (2007)

2008

61. Bartoš, J.:
Positron annihilation response and viscosity of a glass-forming system within the two - order parameter (TOP) model of liquids
J.Phys.- Cond.Matter **20** 285101 - 285105 (2008)
62. Švajdlenková, H., Račko, D. and Bartoš, J.:
Spin probe reorientation and its connections with free volume and relaxation dynamics: Diglycidyl - ether of bis-phenol A
J.Non - Cryst.Solids **354** 1855 – 1861 (2008)
63. Švajdlenková, H. and Bartoš, J.:
Spin probe dynamics in relation to free volume and relaxation dynamics of poly(isobutylene)
Chem.Listy **102** 1271 – 1275 (2008)

2009

64. Bartoš, J.:
A Phenomenological Description of the PALS Response in Glass - Forming Systems
Mat.Sci.Forum **607** 48 - 52 (2009)

65. Švajdlenková, H. and Bartoš, J.:
Spin probe dynamics in relation to free volume and relaxation dynamics of glass - formers: A series of spin probes in poly(isobutylene)
 J.Polym.Sci. B Polym.Sci. **47** 1058 – 1068 (2009)
66. Račko, D., Caponi, S., Alvarez, F., Colmenero, J., and Bartoš, J.:
The free volume structure of polymer melt poly(vinylmethylether) from molecular dynamics and cavity analysis
 J.Chem.Phys. **131** 064903-1-10 (2009)

2010

67. Bartoš, J., Majerník, V., Iskrová, M., Šauša, O., Krištiak, J., Lunkenheimer, P., Loidl, A.:
Positron annihilation response and broadband dielectric spectroscopy. Propylene carbonate.
 J.Non - Cryst.Solids **356** 794-799 (2010)
68. Bartoš, J., Schwartz, G.A., Šauša, O., Alegría, A., Krištiak, J., Colmenero, J.:
Positron annihilation lifetime response and broadband spectroscopy. Poly(propylene glycol).
 J.Non - Cryst.Solids **356** 782-786 (2010)

2011

69. Bartoš, J., Šauša, O., Köhler, M., Švajdlenková, H., Lunkenheimer, P., Krištiak, J., Loidl, A.:
Positron annihilation and broadband dielectric spectroscopy: A series of propylene glycols.
 J.Non - Cryst.Solids **357** 376 – 384 (2011)
70. Bartoš, J., Šauša, O., Schwartz, G.A., Alegría, A., Alberdi, J.M., Krištiak, J., Colmenero, J.:
Positron annihilation response and the relaxation dynamics from broadband dielectric spectroscopy and nuclear magnetic resonance: cis-trans-1,4-Poly(butadiene).
 J.Chem.Physics **134** 164507-1-10 (2011)

also as selected paper in:

The Virtual Journal of Biological Physics Research, May 1 (2011)

71. Švajdlenková, H., Majerník, V., Dlubek, G., Šauša, O., Krištiak, J. and Bartoš, J.:
ESR study of the spin probe dynamics in relation to the free volume from PALS in a series of amorphous polymer glass-formers.
 Macromol. Symp. **305** 108 - 115 (2011)
72. Bartoš, J., Iskrová, M., Köhler, M., Wehn, R., Šauša, O., H., Lunkenheimer, P., Krištiak, J. and Loidl, A.:
Positron annihilation and broadband dielectric spectroscopy: S a l o l.
 Eur.Phys.J. E **34** 104 - 115 (2011)

2012

73. Bartoš, J., Iskrová - Miklošovicová, M., Šauša, O., Cangialosi, D., Alegría, A., Švajdlenková, H., Krištiak, J., Arbe, A., Colmenero, J.:
Positron annihilation response and the relaxation dynamics from broadband dielectric spectroscopy and neutron scattering: Poly(vinyl methylether).
J.Phys. - Cond.Matter **24** 155104 (2012)
74. Švajdlenková, H., Šauša, O., Iskrová, M., Majerník, V., Krištiak, J. and Bartoš, J.:
On the relationships between guest molecular dynamics and free volume in a series of small molecular and polymer glass-formers by means of ESR and PALS.
Chem.Phys.Lett. **539 - 540** 39 - 44 (2012)

2013

75. Yu, Y., Dlubek, G., Bartoš, J., Švajdlenková, H., Krause-Rehberg, R.:
Relationships between positron lifetime and dynamics of polymers.
Mat.Sci.Forum **733** 179 - 182 (2013)
76. Bartoš, J., Švajdlenková, H., Yu, Y., Dlubek, G., Krause-Rehberg, R.
Molecular probe dynamics and free volume in glass-formers: 1,2 - and 1,4 - Poly(butadiene)s
Chem.Phys.Lett. **584** 88 - 92 (2013)
77. Bartoš, J., Švajdlenková, H., Zaleski, R., Edelmann, M., Lukešová, M.:
Spin probe dynamics in relation to free volume in crystalline compounds by ESR and PALS: n-Hexadecane
Physica B Cond.Matter. **430** 99 - 105 (2013)

2014

78. Bartoš, J., Švajdlenková, H., Lukešová, M., Yu, Y., Krause-Rehberg, R.
Molecular probe dynamics and free volume in organic glass-formers: A series of oligomer and polymer 1,4-poly(isoprene)s
Chem.Phys.Lett. **602** 28 - 33 (2014)

2015

79. Lukešová, M., Švajdlenková, H., Sippel, P., Macová, E., Berek, D., Loidl, A. and Bartoš, J.:
Spin probe dynamics of n-hexadecane in confined geometry
Eur.Phys.J. B - Condensed Matter and Complex Systems **88** 46 - 57 (2015)
80. Lukešová, M., Zgardzinska, B., Švajdlenková, H., Zaleski, R., Charmas, B. and Bartoš, J.
Spin probe dynamics in relation to free volume in crystalline compounds by ESR and PALS: n - Tridecane
Physica B - Cond.Matter . **476** 100 - 108 (2015)

2016

81. Bartoš, J., Švajdlenková, H., Šauša, O., Lukešová, M., Ehlers, D, Michl, M.
Lunkenheimer, P., Loidl, A.
Molecular probe dynamics and free volume in organic glass formers and their relationships to structural relaxation: 1-Propanol
J.Phys. - Cond.Matter **28** 015101 - 11 (2016)
82. Švajdlenková, H., Zgardzinska, B., Lukešová, M. and Bartoš, J.
Spin probe dynamics in relation to free volume in crystalline compounds by ESR and PALS: Cyclohexane
Chem.Phys.Letts. **643** 98 - 102 (2016)