CURRICULUM VITAE

SURNAME: Kamnev **FIRST NAME(S):** Alexander A.

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Date and place of birth: 17 December 1958, Saratov, Russian Federation **Nationality:** Russian

Education (*degrees, dates, universities)*

MS (chemistry), 1980, Saratov State University, Russian Federation;
PhD (physical chemistry), 1992;
DSc (physical chemistry), 2002, Saratov State University

Career/Employment (*employers, positions and dates)*

IBPPM RAS, Saratov: Leading Scientist (2003 – present); Senior Scientist (1996 – 2003); Scientist (1992–1996);

Scientific Research Institute of Chemistry at Saratov State University, Research Associate; Scientist (1980–1992).

Specialization

(i) Main field: Molecular mechanisms of plant-bacterial interactions and signalling; plant-growth-promoting rhizobacteria; Azospirilla.

(ii) Other fields: Physicochemical aspects of rhizosphere processes involving metal ions.

(iii) Current research interests: Development and applications of novel spectroscopic and nuclear chemistry approaches in biochemical and microbiological research.

Honours, Awards, Fellowships, Membership of Professional Societies

Personal grant from Int. Sci. Foundation (New York, USA), 1993; Grant (team leader) from the Russ. Foundation for Basic Research (Moscow), 1995–1996; Grant (team leader) from the Russ. Acad. of Sciences' Commission (2000–2003); Grant (team leader) from INTAS (EC, Brussels, Belgium), 1997–2000; UNESCO Short-term Fellowships in biotechnology (1998, 2000, 2002); EMBO Short-term Fellowship in molecular biology (2001); NATO Expert Visit Grants (visiting expert, 1999; 2003, 2005); NATO Collaborative Linkage Grants (Partner-Country Coordinator, 2001–2003; 2004–2006).

Member of the Russian Microbiological Society (FEMS Constituent Society); Russian Society of Biochemists and Molecular Biologists (FEBS Constituent Society).

Personal participation in FEMS Council Meetings (as Deputy Delegate from the Russian Microbiological Society): Jerusalem, Israel, 1996; Budapest, Hungary, 1999.

Personal participation (with presentations) in 46 international conferences (1989–2007), including 31 oral presentations and 6 invited lectures.

Knowledge of foreign languages: Fluent English (colloquial and written).

Publications (*list of selected publications given on separate pages*):

- **Number of papers in refereed journals: 75.**
- **Number of communications to scientific meetings: 132** (full papers and abstracts).
- **Books: 6** (invited chapters).

List of Representative Publications by Dr. A.A. Kamnev
for the last 10 years

1. **A.A. Kamnev.** Physicochemical approaches to studying plant-growth-promoting rhizobacteria. In: Ahmad I. et al. (Eds.). *Plant-Bacteria Interactions. Strategies and Techniques to Promote Plant Growth.* Wiley-VCH, Weinheim, FRG, 2007 (*Invited Chapter, in press*).
2. **A.A. Kamnev.** Metals in soil *versus* plant-microbe interactios: biotic and chemical interferences. In: Barka E.A., Clément Ch. (Eds.). *Plant–Microbe Interaction.* Blackwell Publ., Oxford, U.K., 2007 (*Invited Chapter, in press*).
3. **A.A.Kamnev**, A.V.Tugarova, L.P.Antonyuk, P.A.Tarantilis, L.A.Kulikov, Yu.D.Perfiliev, M.G.Polissiou, P.H.E.Gardiner. Instrumental analysis of bacterial cells using vibrational and emission Mössbauer spectroscopic techniques. – ***Anal. Chim. Acta***, 2006, vol. 573-574, p. 445-452..
4. K.Kovács, **A.A.Kamnev**, J.Mink, Cs.Németh, E.Kuzmann, T.Megyes, T.Grósz, H.Medzihradszky-Schweiger, A.Vértes. Mössbauer, vibrational spectroscopic and solution X-ray diffraction studies of the structure of iron(III) complexes formed with indole-3-alkanoic acids in acidic aqueous solutions. – ***Struct. Chem.***, 2006, vol. 17, No.1, p.105-120.
5. A.V.Tugarova, **A.A.Kamnev**, L.P.Antonyuk, P.H.E.Gardiner. *Azospirillum brasilense* resistance to some heavy metals. – In: M.C. Alpoim, P.V. Morais, M.A. Santos, A.J. Cristóvão, J.A. Centeno, Ph. Collery (Eds.). *Metal Ions in Biology and Medicine*, Vol. 9. John Libbey Eurotext, Paris, 2006. P. 242-245.
6. **A.A.Kamnev**, K.Kovács, A.G.Shchelochkov, L.A.Kulikov, Yu.D.Perfiliev, E.Kuzmann, A.Vértes. Bioleaching and chemical transformations of heavy metals and radionuclides mediated by soil microorganisms. – In: M.C. Alpoim, P.V. Morais, M.A. Santos, A.J. Cristóvão, J.A. Centeno, Ph. Collery (Eds.). *Metal Ions in Biology and Medicine*, Vol. 9. John Libbey Eurotext, Paris, 2006. P. 220-225.
7. Yu.D. Perfiliev, V.S. Rusakov, L.A. Kulikov, **A.A. Kamnev**, K. Alkhatib. Effects of trapped electrons on the line shape in emission Mössbauer spectra. – ***Hyperfine Interactions***, 2006, vol. 167, No. 1-3, p. 881-885.
8. **A.A. Kamnev**, L.A. Kulikov, Yu.D. Perfiliev, L.P. Antonyuk, E. Kuzmann, A. Vértes. Application of ^{57}Co emission Mössbauer spectroscopy to studying biocomplexes in frozen solutions. – ***Hyperfine Interactions***, 2005, V. 165, No. 1-4, p. 303-308.
9. K. Kovács, E. Kuzmann, F. Fodor, A. Vértes, **A.A. Kamnev**. Mössbauer study of iron uptake in cucumber root. – ***Hyperfine Interactions***, 2005, V. 165, No. 1-4, p. 289-294.
10. Yu.D.Perfiliev, V.S.Rusakov, L.A.Kulikov, **A.A.Kamnev**, K.Alkhatib. Reason for line broadening in emission Mössbauer spectra. – ***J. Radioanal. Nucl. Chem.***, 2005, vol. 266, No. 3, p. 557-560.
11. K.Kovács, **A.A.Kamnev**, E.Kuzmann, Z.Homonnay, P.Á.Szilágyi, V.K.Sharma, A.Vértes. Mössbauer studies of iron(III)–(indole-3-alkanoic acids) systems in frozen aqueous solutions. – ***J. Radioanal. Nucl. Chem.***, 2005, vol. 266, No. 3, p. 513-517.
12. **A.A.Kamnev**, L.P.Antonyuk, L.A.Kulikov, Yu.D.Perfiliev, E.Kuzmann, A.Vértes. Probing the enzyme active centers doped with $^{57}Co^{2+}$ ions using emission Mössbauer spectroscopy. – ***Bull. Russ. Acad. Sci. Ser. Phys.***, 2005, vol. 69, No. 9, p. 1389-1392.
13. **A.A.Kamnev**, A.V.Tugarova, L.P.Antonyuk, P.A.Tarantilis, M.G.Polissiou, P.H.E.Gardiner. Effects of heavy metals on plant-associated rhizobacteria: comparison of endophytic and non-endophytic strains of *Azospirillum brasilense*. – ***J. Trace Elem. Med. Biol.***, 2005, v. 19, No. 1, p. 91-95.
14. **A.A.Kamnev**. Application of emission (^{57}Co) Mössbauer spectroscopy in bioscience. – ***J. Mol. Struct.***, 2005, v. 744-747, p. 161-167.
15. **A.A.Kamnev**. Use of spectroscopic methods to study the molecular mechanisms of plant-microbial interactions. – In: V.V. Ignatov (Ed.), *Molecular Bases of Interrelationships between Associative Microorganisms and Plants* (in Russ.), Nauka Publ., Moscow, 2005, p. 238-260.
16. K.Kovács, **A.A.Kamnev**, A.G.Shchelochkov, E.Kuzmann, H.Medzihradszky-Schweiger, J.Mink, A.Vértes. Mössbauer spectroscopic evidence for iron(III) complexation and reduction in acidic aqueous solutions of indole-3-butyric acid. – ***J. Radioanal. Nucl. Chem.***, 2004, v. 262, No. 1, p. 151-156.

17. **A.A.Kamnev**, L.P.Antonyuk, L.A.Kulikov, Yu.D.Perfiliev. Monitoring of cobalt(II) uptake and transformation in cells of the plant-associated soil bacterium *Azospirillum brasilense* using emission Mössbauer spectroscopy. – ***BioMetals***, 2004, v. 17, No. 4, p. 457-466.
18. **A.A.Kamnev**, L.P.Antonyuk, V.E.Smirnova, L.A.Kulikov, Yu.D.Perfiliev, I.A.Kudelina, E.Kuzmann, A.Vértes. Structural characterization of glutamine synthetase from *Azospirillum brasilense*. – ***Biopolymers***, 2004, v. 74, No. 1-2, p. 64-68.
19. **A.A.Kamnev**, L.P.Antonyuk, V.E.Smirnova, L.A.Kulikov, Yu.D.Perfiliev, E.Kuzmann, A.Vértes. Application of emission Mössbauer spectroscopy to the study of cobalt coordination in the active centers of bacterial glutamine synthetase. – ***Dokl. Biochem. Biophys.*** (Moscow), 2003, v. 393, No. 1–6, p. 321-325.
20. **A.A.Kamnev**. Phytoremediation of heavy metals: an overview. – In: M.Fingerman, R.Nagabhushanam (Eds.), *Recent Advances in Marine Biotechnology.* Vol. 8: *Bioremediation*. Science Publishers, Inc., Enfield (NH), USA, 2003, p. 269-317.
21. **A.A.Kamnev**, L.A.Dykman, P.A.Tarantilis, M.G.Polissiou. Spectroimmunochemistry using colloidal gold bioconjugates. – ***Biosci. Rep.***, 2002, v. 22, No. 5-6, p. 541-547.
22. **A.A.Kamnev**, L.P.Antonyuk, A.V.Tugarova, P.A.Tarantilis, M.G.Polissiou, P.H.E.Gardiner. Fourier transform infrared spectroscopic characterisation of heavy metal-induced metabolic changes in the plant-associated soil bacterium *Azospirillum brasilense* Sp7. – ***J. Mol. Struct.***, 2002, v. 610, No. 1-3, p. 127-131.
23. **A.A.Kamnev**, L.P.Antonyuk, V.E.Smirnova, O.B.Serebrennikova, L.A.Kulikov, Yu.D.Perfiliev. Trace cobalt speciation in bacteria and at enzymic active sites using emission Mössbauer spectroscopy. – ***Anal. Bioanal. Chem.***, 2002, v. 372, No. 3, p. 431-435.
24. **A.A.Kamnev**, A.G.Shchelochkov, Yu.D.Perfiliev, P.A.Tarantilis, M.G.Polissiou. Spectroscopic investigation of indole-3-acetic acid interaction with iron(III). – ***J. Mol. Struct.***, 2001, v. 563-564, p. 565-572.
25. **A.A.Kamnev**, P.A.Tarantilis, L.P.Antonyuk, L.A.Bespalova, M.G.Polissiou, M.Colina, P.H.E.Gardiner, V.V.Ignatov. Fourier transform Raman spectroscopic characterisation of cells of the plant-associated soil bacterium *Azospirillum brasilense* Sp7. – ***J. Mol. Struct.***, 2001, v. 563-564, p. 199-207.
26. **A.A.Kamnev**, A.G.Shchelochkov, P.A.Tarantilis, M.G.Polissiou, Yu.D.Perfiliev. Complexation of indole-3-acetic acid with iron(III): influence of coordination on the π-electronic system of the ligand. – ***Monatsh. Chem.***, 2001, v. 132, No. 6, p. 675-681.
27. L.P.Antonyuk, V.E.Smirnova, **A.A.Kamnev**, O.B.Serebrennikova, M.A.Vanoni, G.Zanetti, I.A.Kudelina, O.I.Sokolov, V.V.Ignatov. Influence of divalent cations on the catalytic properties and secondary structure of unadenylylated glutamine synthetase from *Azospirillum brasilense*. – ***BioMetals***, 2001, v. 14, No. 1, p. 13-22.
28. O.V.Ignatov, **A.A.Kamnev**, L.N.Markina, L.P.Antonyuk, M.Colina, V.V.Ignatov. Electro-optical properties of cells of the soil nitrogen-fixing bacterium *Azospirillum brasilense*: effects of copper ions. – ***Appl. Biochem. Microbiol.*** (Moscow), 2001, v. 37, No. 2, p. 219-223.
29. **A.A.Kamnev**, D. van der Lelie. Chemical and biological parameters as tools to evaluate and improve heavy metal phytoremediation. – ***Biosci. Rep.***, 2000, v. 20, No. 4, p. 239-258.
30. **A.A.Kamnev**, E.Kuzmann, Yu.D.Perfiliev, A.Vértes, M.Ristić, S.Popović, S.Musić. Composite ferric oxyhydroxide-containing phases formed in neutral aqueous solutions of tryptophan and indole-3-acetic acid. – ***J. Radioanal. Nucl. Chem.***, 2000, v. 246, No. 1, p. 123-129.
31. Yu.Yu.Berestovskaya, V.V.Ignatov, L.N.Markina, **A.A.Kamnev**, O.E.Makarov. Degradation of *ortho*-chlorophenol, *para*-chlorophenol, and 2,4-dichlorophenoxyacetic acid by the bacterial community of anaerobic sludge. – ***Microbiology*** (Moscow), 2000, v. 69, No. 4, p. 397-400.
32. **A.A.Kamnev**, Yu.D. Perfiliev. Physicochemical and ecological aspects of interaction of indole-3-acetic acid with iron(III). – ***Vestn. Mosk. Univ. Ser. 2: Khim.***, 2000, v. 41, No. 3, p. 205-210.
33. **A.A.Kamnev**, L.P.Antonyuk, M.Colina, A.V.Chernyshev, V.V.Ignatov. Investigation of a microbially produced structural modification of magnesium-ammonium orthophosphate. – ***Monatsh. Chem.***, 1999, v. 130, No. 12, p. 1431-1442.

34. **A.A.Kamnev**, E.Kuzmann, Yu.D.Perfiliev, Gy.Vankó, A.Vértes. Mössbauer and FTIR spectroscopic studies of iron anthranilates: coordination, structure and some ecological aspects of iron complexation. – ***J. Mol. Struct.***, 1999, v. 482-483, p. 703-711.
35. **A.A.Kamnev**, L.P.Antonyuk, L.Yu.Matora, O.B.Serebrennikova, M.V.Sumaroka, M.Colina, M.-F.Renou-Gonnord, V.V.Ignatov. Spectroscopic characterization of cell membranes and their constituents of the plant-associated soil bacterium *Azospirillum brasilense*. – ***J. Mol. Struct.***, 1999, v. 480-481, p. 387-393.
36. **A.A.Kamnev**, L.P.Antonyuk, V.V.Ignatov. Biodegradation of organic pollution involving soil iron(III) solubilized by bacterial siderophores as an electron acceptor: possibilities and perspectives. – In: R.Fass, Y.Flashner and S.Reuveny (Eds.), *Novel Approaches for Bioremediation of Organic Pollution*, Chapter 21, Kluwer Academic / Plenum Publishers, New York, N.Y., 1999, p. 205-217.
37. **A.A.Kamnev**, N.S.Kopelev, Yu.D.Perfiliev. Mössbauer Investigations of Iron-containing Aqueous Alkaline Solutions. – In: "*Mössbauer Spectroscopy of Frozen Solutions*" (Ed. by A.Vértes and D.L.Nagy), Russ. Edn., Chapter 8, Mir Publishers, Moscow, 1998, p. 331-343.
38. **A.A.Kamnev**, M.Colina, J.Rodriguez, N.M.Ptitchkina, V.V.Ignatov. Comparative spectroscopic characterization of different pectins and their sources. – ***Food Hydrocoll.***, 1998, v. 12, No. 3, p. 263-271.
39. **A.A.Kamnev**. Reductive solubilization of Fe(III) by certain products of plant and microbial metabolism as a possible alternative to siderophore secretion. – ***Doklady Biophysics***, 1998, v. 358-360, p. 48-51.
40. **A.A.Kamnev**, M.Ristić, L.P.Antonyuk, A.V.Chernyshev, V.V.Ignatov. Fourier transform infrared spectroscopic study of intact cells of the nitrogen-fixing bacterium *Azospirillum brasilense*. – ***J. Mol. Struct.***, 1997, v. 408/409, p. 201-205.
41. **A.A.Kamnev**, E.Kuzmann. Mössbauer Spectroscopic Evidence for the Reduction of Iron(III) by Anthranilic Acid in Aqueous Solution. – ***Polyhedron***, 1997, v. 16, No. 19, p. 3353-3356.
42. **A.A.Kamnev**, E.Kuzmann. Mössbauer Spectroscopic Study of the Interaction of Indole-3-acetic Acid with Iron(III) in Aqueous Solution. – ***Biochem. Mol. Biol. Int.***, 1997, v. 41, No. 3, p. 575-581.
43. **A.A.Kamnev**, M.Colina, M.-F.Renou-Gonnord, I.Frolov, N.M.Ptitchkina, V.V.Ignatov. Atomic Absorption Spectroscopic Investigation of the Mineral Fraction of Pectins Obtained from Pumpkin and Sugar Beet. – ***Monatsh. Chem.***, 1997, v. 128, No. 3, p. 211–216.
44. **A.A.Kamnev**, M.-F.Renou-Gonnord, L.P.Antonyuk, M.Colina, A.V.Chernyshev, I.Frolov, V.V.Ignatov. Spectroscopic characterization of the uptake of essential and xenobiotic metal cations in cells of the soil bacterium *Azospirillum brasilense*. – ***Biochem. Mol. Biol. Int.***, 1997, v. 41, No. 1, p. 123–130.
45. L.P.Antonyuk, **A.A.Kamnev**, A.V.Chernyshev, V.V.Ignatov. Struvite Crystals Production During Cultivation of the Soil Bacterium *Azospirillum brasilense*. – ***Doklady Biol. Sciences*** **(Moscow)**, 1996, v. 350, p. 547-549.
46. **A.A.Kamnev**, L.P.Antonyuk, A.V.Chernyshev, V.V.Ignatov, M.Colina de Vargas. Spectroscopic Characterization of Mineral Crystals Produced by the Bacterium *Azospirillum brasilense*. – ***Fresenius' J. Anal. Chem.***, 1996, v. 355, No. 5–6, p. 739–741.