

## Curriculum vitae: Zubov V.P.

### Address

Shemyakin–Ovchinnikov Institute of bioorganic chemistry RAS, Moscow, Russia

### Contacts

<https://www.ibch.ru/en/users/6>

### IBCh positions

2019–to date Principal research fellow

### IBCh memberships

Dissertation council

### Awards

1970 [Медаль «За доблестный труд. В ознаменование 100-летия со дня рождения В.И. Ленина»](#)

1998 Премия АН СССР и РАН имени М.М. Шемякина

### Scientific interests

His scientific interests include the synthesis and chemical conversions of polymers, the kinetics and mechanisms of radical polymerization.

### Titles

Professor

Doctor of Science (Chemistry)

### Grants and projects

2018– [Comprehensive research of the physico-chemical and sorption properties of thin films and composites of phenyl/phenyl end-capped tetramer of aniline as a structural analog of polyaniline](#)  
2021

### Publications

1. Yagudaeva EY, Vikhrov AA, Kononov NN, Sochilina AV, Malakhov SN, Dorofeev SG, **Zubov VP** (2025). Conductive polypyrrole and polyvinyl alcohol composites prepared in aqueous ethanol solutions at low temperatures. *Russ Chem Bull* 74 (10), 3163–3172, [10.1007/s11172-025-4796-y](https://doi.org/10.1007/s11172-025-4796-y)
2. Kononov N, Yagudaeva E, Voronov V, Dorofeev S, Malakhova Y, Cerven V, **Zubov V** (2023). Phase Transition in a Tetraaniline/Nanosilicon Composite Film Detected by Impedance Spectroscopy. *J Phys Chem C Nanomater Interfaces* 127 (34), 17063–17077, [10.1021/acs.jpcc.3c02466](https://doi.org/10.1021/acs.jpcc.3c02466)
3. Sochilina AV, Akasov RA, Arkharova NA, Klechkovskaya VV, Mironov AV, Prostyakova AI, Sholina NV, **Zubov VP**, Generalova AN, Vikhrov AA (2022). Fabrication of moldable chitosan gels via thermally induced phase separation in aqueous alcohol solutions. *Int J Biol Macromol* 215, 501–511, [10.1016/j.ijbiomac.2022.06.094](https://doi.org/10.1016/j.ijbiomac.2022.06.094)
4. **(conference)** Malakhova YN, Iskandyarova YG, Malakhov SN, Stupnikov AA, Korovin AN, Yagudaeva EY, **Zubov VP** (2022). Langmuir and Langmuir-Schaefer films of tetraaniline for the development of organic electrochemical devices. *AIP Conf Proc* 2390, 020047–1–5, [10.1063/5.0068950](https://doi.org/10.1063/5.0068950)
5. Rozhkov KI, Yagudaeva EY, Sizova SV, Lazov MA, Smirnova EV, **Zubov VP**, Ischenko AA (2021). Characterization of iron-doped crystalline silicon nanoparticles and their modification with citrate anions for in vivo applications. *FCT* 16 (5), 414–425, [10.32362/2410-6593-2021-16-5-414-425](https://doi.org/10.32362/2410-6593-2021-16-5-414-425)

6. Sochilina AV, Savelyev AG, Akasov RA, **Zubov VP**, Khaydukov EV, Generalova AN (2021). Preparing Modified Hyaluronic Acid with Tunable Content of Vinyl Groups for Use in Fabrication of Scaffolds by Photoinduced Crosslinking. *Russ. J. Bioorganic Chem.* 47 (4), 828–836, [10.1134/S1068162021040191](https://doi.org/10.1134/S1068162021040191)
7. Kapustin DV, Prostyakova AI, Zybin DI, **Zubov VP** (2021). Nanostructured Polymer-Containing Composites as an Efficient Tool for Molecular Diagnostic. *Nanobiotech Rep* 16 (1), 19–41, [10.1134/S2635167621010067](https://doi.org/10.1134/S2635167621010067)
8. Yagudaeva EY, Vikhrov AA, Malakhova Y, Iskandiyarova Y, Firsova M, Prostyakova A, Korovin A, Malakhov S, Nichugovskiy A, **Zubov V**, Kapustin D (2021). Tetramer of aniline as a structural analog of polyaniline – Promising material for biomedical application. *Synth Met* 274 (2), 116712, [10.1016/j.synthmet.2021.116712](https://doi.org/10.1016/j.synthmet.2021.116712)
9. Karimov DN, Demina PA, Koshelev AV, Rocheva VV, Sokovikov AV, Generalova AN, **Zubov VP**, Khaydukov EV, Kovalchuk MV, Panchenko VY (2020). Upconversion Nanoparticles: Synthesis, Photoluminescence Properties, and Applications. *Nanotechnol Russ* 15 (11-12), 655–678, [10.1134/S1995078020060117](https://doi.org/10.1134/S1995078020060117)
10. Вихров АА, **Зубов ВП**, Зайцев СЮ (2020). Получение медьсодержащих полимерных комплексов на основе хитозана, перспективных для сельскохозяйственных применений. *ВЗБ* (8), 60–70, [10.26155/vet.zoo.bio.202008008](https://doi.org/10.26155/vet.zoo.bio.202008008)
11. Sochilina AV, Budylin NY, Gamisonia AM, Chalykh AE, **Zubov VP**, Vikhrov AA (2019). Multichannel hydrogel based on a chitosan–poly(vinyl alcohol) composition for directed growth of animal cells. *Colloids Surf B Biointerfaces* 184, 110495, [10.1016/j.colsurfb.2019.110495](https://doi.org/10.1016/j.colsurfb.2019.110495)
12. Sharonova NV, Ischenko AA, Yagudaeva EY, Sizova SV, Smirnova EV, Ermakova AY, Sviridov AP, **Zubov VP** (2019). Modification of nanocrystalline silicon by polymers for biomedical applications. *Izvestiya Vysshikh Uchebnykh Zavedenii - Khimiya i Khimicheskaya Tekhnologiya* 62 (9), 86–96, [10.6060/ivkkt.20196209.5929](https://doi.org/10.6060/ivkkt.20196209.5929)
13. Konovalova MV, Shagdarova BTs, **Zubov VP**, Svirshchevskaya EV (2019). Express analysis of chitosan and its derivatives by gel electrophoresis. *Prog Chem Appl Chitin Deriv XXIV*, 84–95, [10.15259/PCACD.24.007](https://doi.org/10.15259/PCACD.24.007)
14. Sochilina AV, Savelyev AG, Demina PA, Sizova SV, **Zubov VP**, Khaydukov EV, Generalova AN (2019). Quantitative detection of double bonds in hyaluronic acid derivative via permanganate ions reduction. *Meas Sci Technol* 30 (7), , [10.1088/1361-6501/ab0fb4](https://doi.org/10.1088/1361-6501/ab0fb4)
15. Generalova AN, Asharchuk IM, **Zubov VP** (2018). Multifunctional polymer dispersions for biomedical assays obtained by heterophase radical polymerization. *Russ Chem Bull* 67 (10), 1759–1780, [10.1007/s11172-018-2289-y](https://doi.org/10.1007/s11172-018-2289-y)
16. Генералова АН, Ашарчук ИМ, **Зубов ВП** (2018). Мультифункциональные полимерные дисперсии для биомедицинских исследований, полученные в процессе гетерофазной радикальной полимеризации. *Известия Академии наук. Серия химическая* (10), 1759–1780.
17. (**conference**) Generalova A, Mironova K, Sholina N, Rocheva V, Nechaev A, Grebenik E, Guller A, Zvyagin A, Deyev S, **Zubov V**, Khaydukov E (2018). Upconversion nanoparticles: On the way from diagnostics to theranostics. *EPJ Web of Conference* 190, 03001, [10.1051/epjconf/201819003001](https://doi.org/10.1051/epjconf/201819003001)
18. Generalova AN, **Zubov VP** (2018). Design of polymer particle dispersions (latexes) in the course of radical heterophase polymerization for biomedical applications. *Colloids Surf B Biointerfaces* 166, 303–322, [10.1016/j.colsurfb.2018.03.036](https://doi.org/10.1016/j.colsurfb.2018.03.036)
19. Yagudaeva E, Zybin D, Vikhrov A, Prostyakova A, Ischenko A, **Zubov V**, Kapustin D (2018). Sorption of nucleic acids and proteins on polyaniline and polyaramide nano-coatings as studied by spectral-correlation interferometry in a real time mode. *Colloids Surf B Biointerfaces* 163, 83–90, [10.1016/j.colsurfb.2017.12.025](https://doi.org/10.1016/j.colsurfb.2017.12.025)
20. Liaw DJ, Zybin DI, Prostyakova AI, Yagudaeva EY, Vikhrov AA, Ishchenko AA, **Zubov VP**, Kapustin DV (2017). Static and dynamic sorption of nucleic acids and proteins on surface of sorbents modified with nanolayers of polymers. *Izvestiya Vysshikh Uchebnykh Zavedenii - Khimiya i Khimicheskaya Tekhnologiya* 61 (1), 4–22, [10.6060/tcct.20186101.5694](https://doi.org/10.6060/tcct.20186101.5694)
21. Liaw DJ, Yagudaeva E, Prostyakova A, Lazov M, Zybin D, Ischenko A, **Zubov V**, Chang CH, Huang YC, Kapustin D (2016). Sorption behavior of polyaramides in relation to isolation of nucleic acids and proteins. *Colloids Surf B Biointerfaces* 145, 912–921, [10.1016/j.colsurfb.2016.05.068](https://doi.org/10.1016/j.colsurfb.2016.05.068)
22. Generalova AN, **Zubov VP** (2016). Dispersions of polyacrolein-based multifunctional microspheres for the creation of bioanalytical and visualizing reagents. *Polymer science USSR* 58 (4), 385–410, [10.1134/S1560090416040023](https://doi.org/10.1134/S1560090416040023)
23. Generalova AN, Rocheva VV, Nechaev AV, Khochenkov DA, Sholina NV, Semchishen VA, **Zubov VP**, Koroleva AV, Chichkov BN, Khaydukov EV (2016). PEG-modified upconversion nanoparticles for in vivo

- optical imaging of tumors. *RSC Adv* 36 (6), 30089–30097, [10.1039/C5RA25304G](https://doi.org/10.1039/C5RA25304G)
24. Ivanov AE, **Zubov VP** (2016). Smart polymers as surface modifiers for bioanalytical devices and biomaterials: Theory and practice. *RUSS CHEM REV* 85 (6), 565–584, [10.1070/RCR4567](https://doi.org/10.1070/RCR4567)
  25. Каширина ЕВ ЕИ, Решетов ПД, Алексеева ЛГ, Хлгатын СВ, Рязанцев ДЮ, Гурьянова СВ, **Зубов ВП**, Свирищевская ЕВ (2015). Капсулирование аллергенов клещей домашней пыли в наночастицы на основе хитозана и альгината. 10 (7), 98–104.
  26. Kashirina EI, Reshetov PD, Alekseeva LG, Khlgatyan SV, Ryazantsev DY, **Zubov VP**, Guryanova SV, Svirshchevskaya EV (2015). Capsulation of house-dust-mite allergens into nanoparticles developed from chitosan and alginate. *Nanotechnol Russ* 10 (78), 627–635, [10.1134/S1995078015040084](https://doi.org/10.1134/S1995078015040084)
  27. Generalova AN, Kochneva IK, Khaydukov EV, Semchishen VA, Guller AE, Nechaev AV, Shekhter AB, **Zubov VP**, Zvyagin AV, Deyev SM (2015). Submicron polyacrolein particles in situ embedded with upconversion nanoparticles for bioassay. *Nanoscale* 7 (5), 1709–1717, [10.1039/c4nr05908e](https://doi.org/10.1039/c4nr05908e)
  28. Yagudaeva EY, Liaw DJ, Ischenko AA, Bagratashvili VN, **Zubov VP**, Prostyakova AI, Ryazantsev DY, Sviridov AP, Kapustin DV (2014). New polyamide-containing sorbents for one-step isolation of DNA. *J Mater Sci* 49 (9), 3491–3496, [10.1007/s10853-014-8062-1](https://doi.org/10.1007/s10853-014-8062-1)
  29. Kapustin DV, Prostyakova AI, Alexeev YI, Varlamov DA, **Zubov VP**, Zavriev SK (2014). High-throughput Method of One-Step DNA Isolation for PCR Diagnostics of Mycobacterium tuberculosis. *Acta Naturae* 6 (2), 48–52.
  30. Kapustin DV, Prostyakova AI, Alexeev YI, Varlamov DA, **Zubov V**, Zavriev SK (2014). High-throughput method of one-step DNA isolation for PCR diagnostics of Mycobacterium tuberculosis. *Acta Naturae* 6 (21), 48–52, [10.32607/20758251-2014-6-2-48-52](https://doi.org/10.32607/20758251-2014-6-2-48-52)
  31. Каширина ЕИ, Решетов ПД, Алексеева ЛГ, **Зубов ВП**, Свирищевская ЕВ (2014). Иммуногенность белков, капсулированных в полимерные наночастицы на основе хитозана-альгината. том 8, , 901– 904.
  32. Kapustin DV, Prostyakova AI, **Zubov VP** (2014). Fluoroplast-polyaniline-coated adsorbent for one-step isolation of DNA for PCR detection of viral hepatitis (HBV and TTV). *Bioanalysis* 6 (7), 957–966, [10.4155/bio.13.332](https://doi.org/10.4155/bio.13.332)
  33. Chikhacheva IP, **Zubov VP**, Gomzyak VI, Rumsh LD, Kubrakova IV (2013). Influence of the microwave irradiation on the enzymatic activity of trypsin in the presence of poly(N-vinyl amides). *RUSS J GEN CHEM* 83 (7), 1448–1452, [10.1134/S1070363213070244](https://doi.org/10.1134/S1070363213070244)
  34. Grebenik EA, Nadort A, Generalova AN, Nechaev AV, Sreenivasan VKA, Khaydukov EV, Semchishen VA, Popov AP, Sokolov VI, Akhmanov AS, **Zubov VP**, Klinov DV, Panchenko VY, Deyev SM, Zvyagin AV (2013). Feasibility study of the optical imaging of a breast cancer lesion labeled with upconversion nanoparticle biocomplexes. *J Biomed Opt* 18 (7), 76004, [10.1117/1.JBO.18.7.076004](https://doi.org/10.1117/1.JBO.18.7.076004)
  35. Generalova AN, Oleinikov VA, Sukhanova A, Artemyev MV, **Zubov VP**, Nabiev I (2013). Quantum dot-containing polymer particles with thermosensitive fluorescence. *Biosens Bioelectron* 39 (1), 187–193, [10.1016/j.bios.2012.07.030](https://doi.org/10.1016/j.bios.2012.07.030)
  36. Generalova AN, Oleinikov VA, Sukhanova A, Artemyev MV, **Zubov VP**, Nabiev I (2012). Biosensing with thermosensitive fluorescent quantum dot-containing polymer particles. *Proc SPIE Int Soc Opt Eng* 8460, , [10.1117/12.931427](https://doi.org/10.1117/12.931427)
  37. Ivanov AE, Solodukhina NM, Nilsson L, Nikitin MP, Nikitin PI, **Zubov VP**, Vikhrov AA (2012). Binding of mucin to water-soluble and surface-grafted boronate-containing polymers. *Polym Sci Ser A Chem Phys* 54 (1), 1–10, [10.1134/S0965545X12010026](https://doi.org/10.1134/S0965545X12010026)
  38. Свирищевская ЕВ, Гриневич РС, Решетов ПД, **Зубов ВП**, Зубарева АА, Ильина АВ, Варламов ВП (2012). Наночастицы на основе хитозана. 19 (1), 13–23.
  39. Generalova AN, **Zubov VP**, Mochalov KE, Zdobnova TA, Sizova SV, Deev SM, Petrov RV (2011). Bioanalytical fluorescent reagents based on polyacrolein-containing particles labeled with semiconductor CdSe/ZnS nanocrystals. *Dokl Biochem Biophys* 439 (1), 151–154, [10.1134/S1607672911040016](https://doi.org/10.1134/S1607672911040016)
  40. Generalova AN, Oleinikov VA, Zarifullina MM, Lankina EV, Sizova SV, Artemyev MV, **Zubov VP** (2011). Optical sensing quantum dot-labeled polyacrolein particles prepared by layer-by-layer deposition technique. *J Colloid Interface Sci* 357 (2), 265–272, [10.1016/j.jcis.2011.02.002](https://doi.org/10.1016/j.jcis.2011.02.002)
  41. Kapustin DV, Prostyakova AI, Ryazantsev DY, **Zubov VP** (2011). Novel composite matrices modified with nanolayers of polymers as perspective materials for separation of biomolecules and bioanalysis.

- Nanomedicine (Lond)* 6 (2), 241–255, [10.2217/nnm.11.6](https://doi.org/10.2217/nnm.11.6)
42. Generalova AN, Sizova SV, Zdobnova TA, Zarifullina MM, Artemyev MV, Baranov AV, Oleinikov VA, **Zubov VP**, Deyev SM (2011). Submicron polymer particles containing fluorescent semiconductor nanocrystals CdSe/ZnS for bioassays. *Nanomedicine (Lond)* 6 (2), 195–209, [10.2217/nnm.10.162](https://doi.org/10.2217/nnm.10.162)
  43. Ivanov AE, Solodukhina N, Wahlgren M, Nilsson L, Vikhrov AA, Nikitin MP, Orlov AV, Nikitin PI, Kuzimenkova MV, **Zubov VP** (2011). Reversible Conformational Transitions of a Polymer Brush Containing Boronic Acid and its Interaction with Mucin Glycoprotein. *Macromol Biosci* 11 (2), 275–284, [10.1002/mabi.201000295](https://doi.org/10.1002/mabi.201000295)
  44. VaczineShlosser , Ribbing , Bachman K, **Zubov P**, Kapustin V (2011). Surface coating for laser desorption ionization mass spectrometry of molecules. , .
  45. Kapustin D, Prostyakova A, Bryk Y, Yagudaeva E, **Zubov V** (2011). Materials Modified with Nano-Layers of Functionalized Polymers for Bioanalysis and Medical Diagnostics. , 83–106.
  46. VaczineShlosser G, Ribbing C, Bachman PK, **Zubov VP**, Kapustin DV (2011). Surface coating for laser desorption ionization mass spectrometry of molecules. , .
  47. Yagudaeva EY, Zhigis LS, Razgulyaeva OA, Zueva VS, Melnikov EE, **Zubov VP**, Kozlov LV, Bichucher AM, Kotelnikova OV, Alliluev AP, Avakov AE, Rumsh LD (2010). Isolation and determination of the activity of IgA1 protease from *Neisseria meningitidis*. *Russ. J. Bioorganic Chem.* 36 (1), 81–89, [10.1134/S1068162010010085](https://doi.org/10.1134/S1068162010010085)
  48. Ягудаева ЕЮ, Жигис ЛС, Разгуляева ОА, Зуева ВС, Мельников ЭЭ, **Зубов ВП**, Козлов ЛВ, Бичучер АМ, Котельникова ОВ, Аллилуев АП, Аваков АЭ, Румш ЛД (2010). Выделение и определение активности IGA1-протеиназы из культуры *Neisseria meningitidis*. 36 (1), 96–105.
  49. Ягудаева ЕЮ, Букина ЯА, Простякова АИ, **Зубов ВП**, Тверской ВА, Капустин ДВ (2009). Окислительная полимеризация анилина на поверхности кремнезема в присутствии полисульфоокислот как способ получения эффективных биосорбентов. 51 (6), 1000–1007.
  50. Generalova AN, Sizova SV, Oleinikov VA, **Zubov VP**, Artemyev MV, Spornath L, Kamyshny A, Magdassi S (2009). Highly fluorescent ethyl cellulose nanoparticles containing embedded semiconductor nanocrystals. *Colloids Surf A Physicochem Eng Asp* 342 (13), 59–64, [10.1016/j.colsurfa.2009.04.007](https://doi.org/10.1016/j.colsurfa.2009.04.007)
  51. Yagudaeva EY, Bukina YA, Prostyakova AI, **Zubov VP**, Tverskoy VA, Kapustin DV (2009). Oxidative polymerization of aniline on the surface of silica in the presence of poly(sulfonic acids) as a method of preparing efficient biosorbents. *Polym Sci Ser A Chem Phys* 51 (6), 675–682, [10.1134/S0965545X09060121](https://doi.org/10.1134/S0965545X09060121)
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  54. **Зубов ВП**, Чихачева ИП, Николаева ЕИ, Капустин ДВ, Ягудаева ЕЮ, Кубракова ИВ (2009). Применение микроволнового излучения для синтеза композиционных сорбентов на основе кремнезема, модифицированного поливиниловым спиртом. 79 (2), 203–206.
  55. Leiser RM, Kapustin DV, **Zubov VP**, Balayan H, Plobner L, Brem G (2008). A composite polymer-coated sorbent with a bidisperse pore size distribution for the simultaneous separation and desalting of biopolymers. , .
  56. Kapustin DV, Zavada LL, Barsamjan GB, Ponomarev NN, **Zubov VP**, Leiser RM, Plobner L, Yaroshevskaya EM (2008). New hydrophobic polymer comprising fluorine moieties. , .
  57. **Zubov VP**, Kapustin DV, Generalova AN, Yagudaeva EY, Vikhrov AA, Sizova SV, Muidinov MR (2007). Modification of solids with polymer nanolayers as a process for manufacture of novel biomaterials. *Polym Sci Ser A Chem Phys* 49 (12), 1247–1264, [10.1134/S0965545X07120036](https://doi.org/10.1134/S0965545X07120036)
  58. Ягудаева ЕЮ, Муйдинов МР, Капустин ДВ, **Зубов ВП** (2007). Окислительная полимеризация анилина на поверхности гетерогенных поликислот как способ получения эффективных биосорбентов. (6), 1123–1130.
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61. Stashevskaya K, Markvicheva E, Strukova S, Prudchenko I, **Zubov V**, Grandfils C (2007). Thrombin receptor agonist peptide entrapped in poly(D,L)-lactide-co-glycolide microparticles: Preparation and characterization. *J Microencapsul* 24 (2), 129–142, [10.1080/02652040601058343](https://doi.org/10.1080/02652040601058343)
62. Yagudaeva EYu, Muydinov MR, Kapustin DV, **Zubov VP** (2007). Oxidative polymerization of aniline on the surface of insoluble solid poly (sulfonic acids) as a method for the preparation of efficient bioadsorbents. *J Polym Sci Part A: Polym Chem* 45 (6), 1166–1173.
63. Kapustin DV, Yagudaeva EY, **Zubov VP**, Muydinov MR, Yaroshevskaja EM, Plobner L, Leiser R-M, Brem G (2006). New Polymer-Coated Materials for One-Step Separation of Nucleic Acids. *J Polym Sci Part A: Polym Chem* 44 (3), 113–136.
64. Leiser RM, Plobner L, Yaroshevskaya EM, **Zubov VP**, Kapustin DV, Yagudaeva EYu (2006). Use of a composite polymer-coated sorbent for separation, purification, desalting and concentration of biopolymers. *J Polym Sci Part A: Polym Chem* 44 (3), 113–136.
65. Stashevskaya KS, Markvicheva EA, Strukova SM, Rusanova AK, Makarova AM, Gorbacheva LR, Prudchenko IA, **Zubov VP**, Grandfils K (2006). Biodegradable microparticles with immobilized peptide for wound healing. *Biomed Khim* 52 (1), 83–94.
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68. Kapustin DV, Vikhrov AA, Gorokhova IV, Generalova AN, Kalyazina OV, Murzabekova TG, **Zubov VP** (2005). Multicomponent thermosensitive systems for biocatalysts. *Russ Chem Bull* 54 (2), 452–457, [10.1007/s11172-005-0273-9](https://doi.org/10.1007/s11172-005-0273-9)
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