2017

Protein-tannic acid multilayer films: A multifunctional material for microencapsulation of food-derived bioactives.

Fabrication of PLA/\CaCO_3// hybrid micro-particles as carriers for water-soluble bioactive molecules.
Kudryavtseva VL, Zhao L, Tverdokhlebov SI and Sukhorukov GB. *Colloids and Surfaces B: Biointerfaces* vol. 157, 481-489.

Morphology alterations of skin and subcutaneous fat at NIR laser irradiation combined with delivery of encapsulated indocyanine green.

Polylactic acid nano- and microchamber arrays for encapsulation of small hydrophilic molecules featuring drug release via high intensity focused ultrasound.

Multi-layer microcapsules: fresh insights and new applications.

Polylactic Acid Sealed Polyelectrolyte Multilayer Microchambers for Entrapment of Salts and Small Hydrophilic Molecules Precipitates.

Functional Silver-Coated Colloidosomes as Targeted Carriers for Small Molecules.

Inorganic/Organic Multilayer Capsule Composition for Improved Functionality and External Triggering.
Timin AS, Gao H, Voronin DV, Gorin DA and Sukhorukov GB. *Advanced Materials Interfaces* vol. 4, (1).

2016

Patterned Microstructure Fabrication: Polyelectrolyte Complexes vs Polyelectrolyte Multilayers.  

In vitro and in vivo MRI visualization of nanocomposite biodegradable microcapsules with tunable contrast.  
German SV, Bratashov DN, Navolokin NA, Kozlova AA, Lomova MV, Novoselova MV, Burilova EA, Zyev VV,  

Intracellular redox induced drug release in cancerous and mesenchymal stem cells.  
Timin AS, Lepik KV, Muslimov AM, Gorin DA, Afanasyev BV and Sukhorukov GB. Colloids and Surfaces B:  
Biointerfaces vol. 147, 450-458.

In Situ Synthesis of Fluorescent Carbon Dots/Polyelectrolyte Nanocomposite Microcapsules with Reduced  
Permeability and Ultrasound Sensitivity.  

Multifunctional polyelectrolyte microcapsules as a contrast agent for photoacoustic imaging in blood.  

The effect of gold nanoparticles on the impedance of microcapsules visualized by scanning photo-induced  
impedance microscopy.  
208, 39-46.

In vivo optical monitoring of transcutaneous delivery of calcium carbonate microcontainers.  
Genina EA, Svenskaya YI, Yanina IY, Dolotov LE, Navolokin NA, Bashkatov AN, Terentyuk GS, Bucharskaya AB,  
Maslyakova GN, Gorin DA, Tuchin VV and Sukhorukov GB. Biomedical Optics Express vol. 7, (6) 2082-2082.  
Optical Society of America: Open Access Journals.

Novel Formulation of Chlorhexidine Spheres and Sustained Release with Multilayered Encapsulation.  
Luo D, Shahid S,威尔son RM, Catell M and Sukhorukov GB. Acs Applied Materials and Interfaces vol. 8 (20),  
12652-12660. American Chemical Society.

Intracellularly Biodegradable Polyelectrolyte/Silica Composite Microcapsules as Carriers for Small Molecules.  
Gao H, Goriacheva OA, Tarakina NV and Sukhorukov GB. Acs Applied Materials and Interfaces vol. 8, (15)  
9651-9661. American Chemical Society.

Local and Sustained Activity of Doxycycline Delivered with Layer-by-Layer Microcapsules.  

Bifunctional ultraviolet/ultrasound responsive composite TiO2/polyelectrolyte microcapsules.  

Self-propelled two dimensional polymer multilayer plate micromotors.  

Impact of high-frequency ultrasound on nanocomposite microcapsules: in silico and in situ visualization.  
Korolovych VF, Grishina OA, Inozemtseva OA, Selifonov AV, Bratashov DN, Suchkov SG, Bulavin LA, Gluhkova  

Fabrication and characterization of novel multilayered structures by stereocomplexation of poly(D-lactic  
acid)/poly(L-lactic acid) and self-assembly of polyelectrolytes.  

Triple-responsive inorganic-organic hybrid microcapsules as a biocompatible smart platform for the delivery  
of small molecules.  
Timin AS, Muslimov AR, Lepik KV, Saprykina NN, Sergeev VS, Afanasyev BV, Vilesov AD and Sukhorukov GB.  

New post-processing method of preparing nanofibrous SERS substrates with a high density of silver  
nanoparticles.  
Prikhozhdenko ES, Atkin VS, Parakhonskiy BV, Rybkin IA, Lapanje A, Sukhorukov GB, Gorin DA and Yashchenok  
AM. Rsc Advances vol. 6, (87) 84505-84511.
Hollow silver alginate microspheres for drug delivery and surface enhanced Raman scattering detection.

2015

Alpha-2-macroglobulin loaded microcapsules enhance human leukocyte functions and innate immune response.

Decapsulation of polyelectrolyte nanocomposite microcapsules by pulsed microwave effect.

Microcontact printing of polyelectrolyte multilayer thin films: Glass-viscous flow transition based effects and hydration methods.

Composite magnetic microcapsules based on multilayer assembly of ethanol-soluble polyimide brushes and magnetite nanoparticles: preparation and response to magnetic field gradient.

Ultrasonically assisted fabrication of vaterite submicron-sized carriers.

Composite SERS-based satellites navigated by optical tweezers for single cell analysis.

Layered polymeric capsules inhibiting the activity of RNases for intracellular delivery of messenger RNA.

Nanoplasmonic chitosan nanofibers as effective SERS substrate for detection of small molecules.

Biodegradable fibre scaffolds incorporating water-soluble drugs and proteins.

Naturally inspired polyelectrolyte multilayer composite films synthesised through layer-by-layer assembly and chemically infiltrated with CaCO₃.

Multilayer Capsules of Bovine Serum Albumin and Tannic Acid for Controlled Release by Enzymatic Degradation.
Lomova MV, Brichkina AI, Kiryukhin MV, Vasina EN, Pavlov AM, Gorin DA, Sukhorukov GB and Antipina MN. Acs Appl Mater Interfaces vol. 7, (22) 11732-11740.

Improved and targeted delivery of bioactive molecules to cells with magnetic layer-by-layer assembled microcapsules.

Microcontact printing of polyelectrolyte multilayer thin films: Glass-viscous flow transition based effects and hydration methods.
Composite silica nanoparticle/polyelectrolyte microcapsules with reduced permeability and enhanced ultrasound sensitivity.

Particle-based optical sensing of intracellular ions at the example of calcium - what are the experimental pitfalls?.

Controlled release of C-type natriuretic peptide by microencapsulation dampens proinflammatory effects induced by IL-1β in cartilage explants.

Encapsulation of phase change materials using layer-by-layer assembled polyelectrolytes.

2014

Microcapsules functionalized with neuraminidase can enter vascular endothelial cells in vitro.

Large-scale high-quality 2D silica crystals: dip-drawing formation and decoration with gold nanorods and nanospheres for SERS analysis.

Editorial overview: new technologies: how to put everything you need in a tiny pack and track its delivery?.
Sukhorukov GB. *Curr Opin Pharmacol* vol. 18, vii-ix.

Nanocapsulated and microencapsulated SERS platforms for biomedical analysis.
Stetciura IY, Markin AV, Bratashov DN, Sukhorukov GB and Gorin DA. *Curr Opin Pharmacol* vol. 18, 149-158.

Biofunctionalization of PEGylated microcapsules for exclusive binding to protein substrates.
Deo DI, Gautrot JE, Sukhorukov GB and Wang W. *Biomacromolecules* vol. 15, (7) 2555-2562.

UV light stimulated encapsulation and release by polyelectrolyte microcapsules.
Yi Q and Sukhorokov GB. *Adv Colloid Interface Sci* vol. 207, 280-289.

UV-induced disruption of microcapsules with azobenzene groups.
Yi Q and Sukhorokov GB. *Soft Matter* vol. 10, (9) 1384-1391.

Magnetic Resonance Imaging for Monitoring of Magnetic Polyelectrolyte Capsule In Vivo Delivery.

Overgrowth of gold nanorods by using a binary surfactant mixture.

Biocatalytic response of multi-layer assembled collagen/hyaluronic acid nanoengineered capsules.

The Influence of Hydroxyapatite and Calcium Carbonate Microparticles on the Mechanical Properties of Nonwoven Composite Materials Based on Polycaprolactone.

Micropackaging via layer-by-layer assembly: Microcapsules and microchamber arrays.
Antipina MN, Kiryukhin MV, Skirtach AG and Sukhorukov GB. *International Materials Reviews* vol. 59, (4) 224-244.
2013

Magnetically engineered microcapsules as intracellular anchors for remote control over cellular mobility.

Location of molecules in layer-by-layer assembled microcapsules influences activity, cell delivery and susceptibility to enzyme degradation.

Single-component diazo-resin microcapsules for encapsulation and triggered release of small molecules.
Yi Q and Sukhorukov GB. Particle and Particle Systems Characterization vol. 30, (11) 989-995.

Remotely controlled colloids, interfaces, and biosystems.
Sukhorukov G, Luzinov I and Minko S. Particle and Particle Systems Characterization vol. 30, (11) 920-921.

Externally triggered dual function of complex microcapsules.
Yi Q and Sukhorukov GB. Acs Nano vol. 7, (10) 8693-8705.

Externally Triggered Dual Function of Complex Microcapsules.
Yi Q and Sukhorukov G. Acs Nano vol. 7, 8693-8705.WEISS PS.

Layer-by-layer assembled multilayer shells for encapsulation and release of fragrance.

Photolysis triggered sealing of multilayer capsules to entrap small molecules.
Yi Q and Sukhorukov GB. Acs Applied Materials and Interfaces vol. 5, (14) 6723-6731.

Lessons in microcapsule assembly from imaging delivery of a bioluminescent enzyme.

Individually addressable patterned multilayer microchambers for site-specific release-on-demand.
Kiryukhin MV, Gorelik SR, Man SM, Subramanian GS, Antipina MN, Low HY and Sukhorukov GB. Macromolecular Rapid Communications vol. 34, (1) 87-93.

Chemosensors and biosensors based on polyelectrolyte microcapsules containing fluorescent dyes and enzymes.
Kazakova LI, Shabarchina LI, Anastasova S, Pavlov AM, Vadgama P, Skirtach AG and Sukhorukov GB. Analytical and Bioanalytical Chemistry vol. 405, (5) 1559-1568.

2012

UV-Cross-linkable multilayer microcapsules made of weak polyelectrolytes.

Encapsulation of Basic Fibroblast Growth Factor by Polyelectrolyte Multilayer Microcapsules and Its Controlled Release for Enhancing Cell Proliferation.

Stimuli-Responsive Polymer Composite Multilayer Microcapsules and Microchamber Arrays.

One-step formulation of protein microparticles with tailored properties: Hard templating at soft conditions.

NIR-light triggered delivery of macromolecules into the cytosol.
Adhesion of polyelectrolyte multilayers: Sealing and transfer of microchamber arrays.

Visualization of magnetic microcapsules in liquid by optical coherent tomography and control of their arrangement via external magnetic field.

Chemosensors and biosensors based on polyelectrolyte microcapsules containing fluorescent dyes and enzymes.
Kazakova LI, Shabarchina LI, Anastasova S, Pavlov AM, Vadgama P, Skirtach AG and Sukhorukov GB. *Analytical and Bioanalytical Chemistry* 1-10.

2011

Raman imaging and photodegradation study of phthalocyanine containing microcapsules and coated particles.

Secondary ion mass spectrometry of macromolecules loading in individual polyelectrolyte multilayer microcapsules.

Remote control over guidance and release properties of composite polyelectrolyte based capsules.
Antipina MN and Sukhorukov GB. *Advanced Drug Delivery Reviews* vol. 63, (9) 716-729.

Fabrication and mechanical properties of microchambers made of polyelectrolyte multilayers.

Peculiarities of polyelectrolyte multilayer assembly on patterned surfaces.

Co-encapsulation of enzyme and sensitive dye as a tool for fabrication of microcapsule based sensor for urea measuring.
Kazakova LI, Shabarchina LI and Sukhorukov GB. *Physical Chemistry Chemical Physics* vol. 13, (23) 111110-111117.

Neuron Cells Uptake of Polymeric Microcapsules and Subsequent Intracellular Release.

Controlled protein release from microcapsules with composite shells using high frequency ultrasound - Potential for in vivo medical use.

Raman imaging and photodegradation study of phthalocyanine containing microcapsules and coated particles.

Kinetic stability of water-dispersed oil droplets encapsulated in a polyelectrolyte multilayer shell.

A smart pill.

2010

Antioxidant coating of micronsize droplets for prevention of lipid peroxidation in oil-in-water emulsion.
Lomova MV, Sukhorukov GB and Antipina MN. *Acs Applied Materials and Interfaces* vol. 2, (12) 3669-3676.
Salt-induced fusion of microcapsules of polyelectrolytes.

Carbon nanotubes on polymeric microcapsules: Freestanding structures and point-wise laser openings.

Polymeric Multilayer Capsules in Drug Delivery.

Layer by layer microencapsulate technology as basis for fabrication of drug delivery nanosystems with remote controlling properties.
Inozemtseva OA, Portnov SA, Kolesnikova TA, Gorin DA and Sukhorukov GB.

Dextran coatings for aggregation control of layer-by-layer assembled polyelectrolyte microcapsules.

Mechanism of protein release from polyelectrolyte multilayer microcapsules.
She Z, Antipina MN, Li J and Sukhorukov GB. Biomacromolecules vol. 11, (5) 1241-1247.

Nanoparticles on polyelectrolytes at low concentration: Controlling concentration and size.

Liquid crystal-in-water emulsion stabilized by layer-by-layer adsorption of polyelectrolytes and magnetite nanoparticles.

Emerging applications of stimuli-responsive polymer materials.

2009

Direction specific release from giant microgel-templated polyelectrolyte microcontainers.

Controlled intracellular release of peptides from microcapsules enhances antigen presentation on MHC class I molecules.

Relaxation times of colloidal iron platinum in polymer matrixes.

The pros and cons of polyelectrolyte capsules in drug delivery.

Assembling polyelectrolytes and porphyrins into hollow capsules with laser-responsive oxidative properties.

Polyelectrolyte microcapsules for biomedical applications.

On the mechanical stability of polymeric microcontainers functionalized with nanoparticles.
**Patterned microcontainers as novel functional elements for ?tAS and LOC.**
Antipina MN, Kiryukhin MV, Chong K, Low HY and Sukhorukov GB. *Lab On a Chip* vol. 9, (10) 1472-1475.

**[Biodegradable microcapsules containing DNA for the new DNA vaccine design].**
Selina OE, Belov SY, Vlasova NN, Balyshева VI, Churin AI, Bartkoviak A, Sukhorukov GB and Markvicheva EA. *Bioorganicheskaia Khimiia* vol. 35, (1) 113-121.

**Biodegradable microcapsules with entrapped DNA for development of new DNA vaccines.**

2008

**Towards polymer-based capsules with drastically reduced controlled permeability.**

**Multifunctional microcontainers with tuned permeability for delivery and (bio)chemical reactions.**
Andreeva DV, Kreft O, Skirtach AG and Sukhorukov GB.

**Magnetic/gold nanoparticle functionalized biocompatible microcapsules with sensitivity to laser irradiation.**

**Uptake of colloidal polyelectrolyte-coated particles and polyelectrolyte multilayer capsules by living cells.**

**Photoactivated release of cargo from the cavity of polyelectrolyte capsules to the cytosol of cells.**

**A novel flow-cytometry-based assay for cellular uptake studies of polyelectrolyte microcapsules.**

**Stimuli-responsive polyelectrolyte microcapsules for biomedical applications.**
De Geest BG, Skirtach AG, Sukhorukov GB, Demeester J, De Smedt SC and Hennink WE. *American Chemical Society, Polymer Preprints, Division of Polymer Chemistry* vol. 49, (1) 1074-1075.

**Reversibly permeable nanomembranes of polymeric microcapsules.**

**Toward self-assembly of nanoparticles on polymeric microshells: Near-IR release and permeability.**

**Entrapment of herbal extracts into biodegradable microcapsules.**

**Polyelectrolyte microcapsules with carbohydrate-sensitive properties.**
Levy T, DAjgurat C and Sukhorukov GB. *Advanced Functional Materials* vol. 18, (10) 1586-1594.

**CO2-switchable oligoamine patches based on amino acids and their use to build polyelectrolyte containers with intelligent gating.**

**Polyelectrolyte microcapsules as the systems for delivery of biologically active substances.**
Nanorods as wavelength-selective absorption centers in the visible and near-infrared regions of the electromagnetic spectrum.

Stable stealth function for hollow polyelectrolyte microcapsules through a poly(ethylene glycol) grafted polyelectrolyte adlayer.
Wattendorf U, Kreft O, Textor M, Sukhorukov GB and Merkle HP. Biomacromolecules vol. 9, (1) 100-108.

2007

Ultrasound stimulated release and catalysis using polyelectrolyte multilayer capsules.

Polyelectrolyte/magnetite nanoparticle multilayers: Preparation and structure characterization.

Donnan equilibrium and osmotic pressure in hollow polyelectrolyte microcapsules.

Solvent-filled matrix polyelectrolyte capsules: Preparation, structure and dynamics.

Polymer microcapsules as mobile local pH-sensors.

Remote control of bioreactions in multicompartment capsules.

Controlled release of DNA from self-degrading microcapsules.


Novel type of self-assembled polyamide and polyimide nanoengineered shells-fabrication of microcontainers with shielding properties.

Shell-in-shell microcapsules: A novel tool for integrated, spatially confined enzymatic reactions.

Optically driven encapsulation using novel polymeric hollow shells containing an azobenzene polymer.
BÄ©nard M, Skirtach AG and Sukhorukov GB. Macromolecular Rapid Communications vol. 28, (15) 1517-1521.

Multifunctionalized polymer microcapsules: Novel tools for biological and pharmacological applications.

Membrane densification of heated polyelectrolyte multilayer capsules characterized by soft X-ray microscopy.

Ultrasound-triggered release from multilayered capsules.
Synthesis of silver nanoparticles for remote opening of polyelectrolyte microcapsules.

Release mechanisms for polyelectrolyte capsules.
De Geest BG, Sanders NN, Sukhorukov GB, Demeester J and De Smedt SC. *Chemical Society Reviews* vol. 36, (4) 636-649.

Stabilization of silver nanoparticles by polyelectrolytes and polyethylene glycol.

Self-rupturing and hollow microcapsules prepared from bio-polyelectrolyte-coated microgels.

Multifunctional cargo systems for biotechnology.
Sukhorukov GB and Möhwald H. *Trends in Biotechnology* vol. 25, (3) 93-98.

Nanoparticles distribution control by polymers: Aggregates versus nonaggregates.
Skirtach AG, Däjugnat C, Braun D, Susha AS, Rogach AL and Sukhorukov GB. *Journal of Physical Chemistry C* vol. 111, (2) 555-564.

Stimuli-responsive multilayered hybrid nanoparticle/polyelectrolyte capsules.

Entrapment of herbal extracts in biodegradable microcapsules.

Polyelectrolyte microcapsules as systems for delivery of biologically active substances.

2006

Fabrication of hollow multifunctional spheres containing MCM-41 nanoparticles and magnetite nanoparticles using layer-by-layer method.
Sadasivan S and Sukhorukov GB. *Journal of Colloid and Interface Science* vol. 304, (2) 437-441.

Behavior of temperature-sensitive PNIPAM confined in polyelectrolyte capsules.
Prevot M, Däjugnat C, Möhwald H and Sukhorukov GB. *Chemphyschem* vol. 7, (12) 2497-2502.

Thermal behavior of polyelectrolyte multilayer microcapsules: 2. Insight into molecular mechanisms for the PDADMAC/PSS system.
Köhler K, Möhwald H and Sukhorukov GB. *Journal of Physical Chemistry B* vol. 110, (47) 24002-24010.

Micromechanical theory for pH-dependent polyelectrolyte multilayer capsule swelling.

Salt-induced swelling-to-shrinking transition in polyelectrolyte multilayer capsules.

Fabrication of organized porphyrin-nanotube-attached heat-sensitive polyelectrolyte capsules.

Balance of hydrophobic and electrostatic forces in the pH response of weak polyelectrolyte capsules.
Mauser T, Dâjugnat C and Sukhorukov GB. *Journal of Physical Chemistry B* vol. 110, (41) 20246-20253.

Preparation of polyelectrolyte microcapsules with silver and gold nanoparticles in a shell and the remote destruction of microcapsules under laser irradiation.
Bukreeva TV, Parakhonsky BV, Skirtach AG, Susha AS and Sukhorukov GB. *Crystallography Reports* vol. 51, (5) 863-869.
Laser-induced release of encapsulated materials inside living cells.  

Microcapsules through Layer-by-Layer Assembly Technique.  
DÉjugnat C, Shchukin DG and Sukhorukov GB.  
Functional Coatings: by Polymer Microencapsulation.

Magnetic microcapsules with low permeable polypyrrole skin layer.  
Andreeva DV, Gorin DA, Shchukin DG and Sukhorukov GB.  
Macromolecular Rapid Communications vol. 27, (12) 931-936.

Microcapsules made of weak polyelectrolytes: Templating and stimuli-responsive properties.  
Mauser T, DÉjugnat C, Möhwald H and Sukhorukov GB.  
Langmuir vol. 22, (13) 5888-5893.

Polyelectrolyte films based on polysaccharides of different conformations: Effects on multilayer structure and mechanical properties.  
Schoeler B, Delorme N, Doench I, Sukhorukov GB, Fery A and Glinel K.  
Biomacromolecules vol. 7, (6) 2065-2071.

Intracellularly degradable polyelectrolyte microcapsules.  
De Geest BG, Vandenbroucke RE, Guenther AM, Sukhorukov GB, Hennink WE, Sanders NN, Demeester J and De Smedt SC.  
Advanced Materials vol. 18, (8) 1005-1009.

Red blood cell templated polyelectrolyte capsules: A novel vehicle for the stable encapsulation of DNA and proteins.  
Kreft O, Georgieva R, BÄtzler H, Steup M, Müller-Roher B, Sukhorukov GB and MÄhwald H.  
Macromolecular Rapid Communications vol. 27, (6) 435-440.

Combined atomic force microscopy and optical microscopy measurements as a method to investigate particle uptake by cells.  
Javier AM, Kreft O, Alberola AP, Kirchner C, Zebli B, Susha AS, Horn E, Kempter S, Skirtach AG, Rogach AL, RÄDler J, Sukhorukov GB, Benoit M and Parak WJ.  
Small vol. 2, (3) 394-400.

Real-time assessment of spatial and temporal coupled catalysis within polyelectrolyte microcapsules containing coimmobilized glucose oxidase and peroxidase.  
Stein EW, Volodkin DV, McShane MJ and Sukhorukov GB.  
Biomacromolecules vol. 7, (3) 710-719.

Protection of mammalian cell used in biosensors by coating with a polyelectrolyte shell.  
Biosensors and Bioelectronics vol. 21, (8) 1566-1573.

Effect of microwave radiation on polymer microcapsules containing inorganic nanoparticles.  
Gorin DA, Shchukin DG, Mikhailov AI, Köhler K, Sergeev SA, Portnov SA, Taranov IV, Kislov VV and Sukhorukov GB.  

2005

Laser induced activation of microcapsules containing nanoparticles and IR-DYE.  
Skirtach AG, Dejgunat C, Antipov AA, Halozan D, Susha AS, Shchukin DG and Sukhorukov GB.  
Physics, Chemistry and Application of Nanostructures - Reviews and Short Notes to Nanomeeting 2005 357-362.

Hollow micro- and nanoreactors for synthesis of new materials.  
Shchukin DG, Sukhorukov GB and Möhwald H.  
Physics, Chemistry and Application of Nanostructures - Reviews and Short Notes to Nanomeeting 2005 493-496.

Melting of PDADMAC/PSS capsules investigated with AFM force spectroscopy.  
Macromolecules vol. 38, (23) 9766-9771.

Influence of different salts on micro-sized polyelectrolyte hollow capsules.  
Journal of Materials Chemistry vol. 15, (40) 4301-4310.
Thermal behavior of polyelectrolyte multilayer microcapsules. 1. The effect of odd and even layer number.

Self-rupturing microcapsules.

Cytotoxicity of nanoparticle-loaded polymer capsules.

Polyelectrolyte multilayer microspheres as carriers for bienzyme system: Preparation and characterization.
Balabushevich NG, Sukhorukov GB and Larionova NI. *Macromolecular Rapid Communications* vol. 26, (14) 1168-1172.

The Role of Metal Nanoparticles in Remote Release of Encapsulated Materials.

Defined picogram dose inclusion and release of macromolecules using polyelectrolyte microcapsules.

Microgel-based engineered nanostructures and their applicability with template-directed layer-by-layer polyelectrolyte assembly in protein encapsulation.
Shenoy DB and Sukhorukov GB. *Macromolecular Bioscience* vol. 5, (5) 451-458.

Palladium nanoclusters in microcapsule membranes: From synthetic shells to synthetic cells.

Gas-filled polyelectrolyte capsules.

Influence of shell structure on stability, integrity, and mesh size of polyelectrolyte capsules: Mechanism and strategy for improved preparation.

Magnetic targeting and cellular uptake of polymer microcapsules simultaneously functionalized with magnetic and luminescent nanocrystals.

Protein-calcium carbonate coprecipitation: A tool for protein encapsulation.
Petrov AI, Volodkin DV and Sukhorukov GB. *Biotechnology Progress* vol. 21, (3) 918-925.

Halloysite nanotubes as biomimetic nanoreactors.
Shchukin DG, Sukhorukov GB, Price RR and Lvov YM. *Small* vol. 1, (5) 510-513.

Biofunctional polyelectrolyte multilayers and microcapsules: Control of non-specific and bio-specific protein adsorption.

Metallized polyelectrolyte microcapsules.
Shchukin DG, Ustínovich EA, Sukhorukov GB, Möhwald H and Sviridov DV. *Advanced Materials* vol. 17, (4) 468-472.

Nanoengineered polymer capsules: Tools for detection, controlled delivery, and site-specific manipulation.
Metallized Polyelectrolyte Microcapsules.

Towards encoding combinatorial libraries: Charge driven microencapsulation of semi conductor nanocrystals luminescing in the visible and near IR.

2004

Fabrication of fluorescent rare earth phosphates in confined media of polyelectrolyte microcapsules.

Drastic morphological modification of polyelectrolyte microcapsules induced by high temperature.

Effect of shear stress on adhering polyelectrolyte capsules.
Cordeiro AL, Coelho M, Sukhorukov GB, Dubreuil F and Möhwald H. Journal of Colloid and Interface Science vol. 280, (1) 68-75.

Engineered microcrystals for direct surface modification with layer-by-layer technique for optimized dissolution.
Shenoy DB and Sukhorukov GB. European Journal of Pharmaceutics and Biopharmaceutics vol. 58, (3) 521-527.

Reversible pH-dependent properties of multilayer microcapsules made of weak polyelectrolytes.
Mauser T, DaJjugnat C and Sukhorukov GB. Macromolecular Rapid Communications vol. 25, (20) 1781-1785.

Determination of pore size of catanionic icosahedral aggregates.
Glinel K, Dubois M, Verbavatz JM, Sukhorukov GB and Zemb T. Langmuir vol. 20, (20) 8546-8551.

Simple method of hydrophilic/hydrophobic patterning of solid surfaces and its application to self-assembling of nanoengineered polymeric capsules.

Modified polyelectrolyte microcapsules as smart defense systems.

Protein encapsulation via porous CaCO3 microparticles templating.

Polyelectrolyte nanoparticles mediate vascular gene delivery.

Physical chemistry of encapsulation and release.

pH-responsive properties of hollow polyelectrolyte microcapsules templated on various cores.

Remote activation of capsules containing Ag nanoparticles and IR dye by laser light.

Porous calcium carbonate microparticles as templates for encapsulation of bioactive compounds.

Control of the water permeability of polyelectrolyte multilayers by deposition of charged paraffin particles.
Polyelectrolyte capsules modified with YF3 nanoparticles: An AFM study.

Nanoparticle synthesis in engineered organic nanoscale reactors.
Shchukin DG and Sukhorukov GB. Adv Mater vol. 16, (8) 671-682.

Matrix Polyelectrolyte Microcapsules: New System for Macromolecule Encapsulation.

Nanoassembly of Biodegradable Microcapsules for DNA Encasing.

Polyelectrolyte Micropatterning Using a Laminar-Flow Microfluidic Device.

Comparative analysis of hollow and filled polyelectrolyte microcapsules templated on melamine formaldehyde and carbonate cores.
Sukhorukov GB, Shchukin DG, Dong WF, Möhwald H, Lulevich VV and Vinogradova OI. Macromolecular Chemistry and Physics vol. 205, (4) 530-535.

Liposome-Based Nanocapsules.

Luminescent Polymer Microcapsules Addressable by a Magnetic Field.
Gaponik N, Radtchenko IL, Sukhorukov GB and Rogach AL. Langmuir vol. 20, (4) 1449-1452.

Young's modulus of polyelectrolyte multilayers from microcapsule swelling.

2003

Base-acid equilibria in polyelectrolyte systems: From weak polyelectrolytes to interpolyelectrolyte complexes and multilayered polyelectrolyte shells.
Petrov AI, Antipov AA and Sukhorukov GB. Macromolecules vol. 36, (26) 10079-10086.

Design of a Microfluidic System to Investigate the Mechanical Properties of Layer-by-Layer Fabricated Capsules.

Synthesis of binary polyelectrolyte/inorganic composite capsules of micron size.
Shchukin DG and Sukhorukov GB. Colloid and Polymer Science vol. 281, (12) 1201-1204.

Photoinduced Reduction of Silver inside Microscale Polyelectrolyte Capsules.
Shchukin DG, Radtchenko IL and Sukhorukov GB. Chemphyschem vol. 4, (10) 1101-1103.

Peptide-mediated gene transfer. Effect of the size of complexes with DNA on the efficiency of transfection and receptor-specific binding with cellular target.

Biomimetic fabrication of nanoengineered hydroxyapatite/polyelectrolyte composite shell.

Photocatalytic microreactors based on TiO2-modified polyelectrolyte multilayer capsules.
Smart inorganic/organic nanocomposite hollow microcapsules.

Thermosensitive Hollow Capsules Based on Thermoresponsive Polyelectrolytes.

The structure of multilayer films of DNA-aliphatic amine is preparation technique dependent.

Loading the multilayer dextran sulfate/protamine microsized capsules with peroxidase.
Balabushevich NG, Tiourina OP, Volodkin DV, Larionova NI and Sukhorukov GB. Biomacromolecules vol. 4, (5) 1191-1197.

Carbonate microparticles for hollow polyelectrolyte capsules fabrication.

Deposition and patterning of polymeric capsule layers.

Enhanced Raman imaging and optical spectra of gold nanoparticle doped microcapsules.
Dong WF, Sukhorukov GB and Möhwald H. Physical Chemistry Chemical Physics vol. 5, (14) 3003-3012.

Molecular-dynamics simulations and x-ray analysis of dye precipitates in the polyelectrolyte microcapsules.

Selective YF3 nanoparticle formation in polyelectrolyte capsules as microcontainers for yttrium recovery from aqueous solutions.

Spatially confined tungstate ion polymerization in microcapsules.
Shchukin DG, Dong W and Sukhorukov GB. Macromolecular Rapid Communications vol. 24, (7) 462-466.

Model system for controlled protein release: ph-Sensitive polyelectrolyte microparticles.

Mechanical properties of polyelectrolyte microcapsules filled with a neutral polymer.
Lulevich VV, Radtchenko IL, Sukhorukov GB and Vinogradova OL. Macromolecules vol. 36, (8) 2832-2837.

Deformation properties of nanoadhesive polyelectrolyte microcapsules studied with the atomic force microscope.

Influence of the ionic strength on the polyelectrolyte multilayers’ permeability.

Urease-catalyzed carbonate precipitation inside the restricted volume of polyelectrolyte capsules.

Layer-by-layer engineering of biocompatible, decomposable core-shell structures.
Shenoy DB, Antipov AA, Sukhorukov GB and Möhwald H. Biomacromolecules vol. 4, (2) 265-272.

Micron-scale hollow polyelectrolyte capsules with nanosized magnetic Fe3O4 inside.

Labeling of biocompatible polymer microcapsules with near-infrared emitting nanocrystals.
Inclusion of proteins into polyelectrolyte microparticles by alternative adsorption of polyelectrolytes on protein aggregates.
Volodkin DV, Balabushevitch NG, Sukhorukov GB and Larionova NI. Biochemistry (Moscow) vol. 68, (2) 236-241.

Effect of temperature, pH and shell thickness on the rate of Mg2+ and OX2- release from multilayered polyelectrolyte shells deposited onto microcrystals of magnesium oxalate.

Synthesis of nanosized magnetic ferrite particles inside hollow polyelectrolyte capsules.

Inclusion of proteins into polyelectrolyte microparticles by alternative adsorption of polyelectrolytes on protein aggregates.
Volodkin DV, Balabushevitch NG, Sukhorukov GB and Larionova NI. Biokhimiya vol. 68, (2) 283-289.

2002

Hollow polymer shells from biological templates: Fabrication and potential applications.

Artificial cell based on lipid hollow polyelectrolyte microcapsules: Channel reconstruction and membrane potential measurement.

Inorganic particle synthesis in confined micron-sized polyelectrolyte capsules.
Radtchenko IL, Giersig M and Sukhorukov GB. Langmuir vol. 18, (21) 8204-8208.

Fabrication of a novel type of metallized colloids and hollow capsules.

Magnetic bio/nanoreactor with multilayer shells of glucose oxidase and inorganic nanoparticles.

Toward encoding combinatorial libraries: Charge-driven microencapsulation of semiconductor nanocrystals luminescing in the visible and near IR.

Characterization of structure and mechanism of transfection-active peptide-DNA complexes.

Incorporation of macromolecules into polyelectrolyte micro- and nanocapsules via surface controlled precipitation on colloidal particles.

Polyelectrolyte multilayer capsules as drug carriers.

Intelligent polymer micro- and nanosized capsules.

Precipitation of inorganic salts inside hollow micrometer-sized polyelectrolyte shells.

2001

From polymeric films to nanocapsules.
Encapsulation of proteins by layer-by-layer adsorption of polyelectrolytes onto protein aggregates: Factors regulating the protein release.
Balabushevitch NG, Sukhorukov GB, Moroz NA, Volodkin DV, Larionova NI, Donath E and Mohwald H. *Biotechnology and Bioengineering* vol. 76, (3) 207-213.

Core-shell structures formed by the solvent-controlled precipitation of luminescent CdTe nanocrystals on latex spheres.
Radtchenko IL, Sukhorukov GB, Gaponik N, Kornowski A, Rogach AL and Möhwald H. *Advanced Materials* vol. 13, (22) 1684-1687.

Entrapment of ß-chymotrypsin into hollow polyelectrolyte microcapsules.

Urease Encapsulation in Nanoorganized Microshells.

2000

Conformational state and molecular ionic transformations of polycytidyl acid immobilized in multilayer Langmuir- and polyelectrolyte films.
Sukhorukov BI, Sukhorukov GB, Shabarchina LI and Møltrem MM. *Biofizika* vol. 45, (1) 49-50.

Preparation of DNA-cationic amphiphile multilayer films by alternate adsorption and a study of their structure.

Modeling of DNA-membrane contact by multilayer films of DNA with cationic amphiphiles and lipids.
Microencapsulation by means of step-wise adsorption of polyelectrolytes.

Nano- and microengineering: Three-dimensional colloidal photonic crystals prepared from submicrometer-sized polystyrene latex spheres pre-coated with luminescent polyelectrolyte/nanocrystal shells.

Conformational state and molecular ionic transformations of polycytidyl acid immobilized in multilayer Langmuir- and polyelectrolyte films.
Sukhorukov BI, Sukhorukov GB, Shabarchina LI and Montrel MM. *Biofizika+* vol. 45, (1) 40-50.

Controlled precipitation of dyes into hollow polyelectrolyte capsules based on colloids and biocolloids.

Conformation and molecular and ionic transformations of polycytidylic acid immobilized in multilayer Langmuir and polyelectrolyte films.
Sukhorukov BI, Sukhorukov GB, Shabarchina LI and Montrel MM. *Biofizika* vol. 45, (1) 40-50.

1999

Membrane filtration for microencapsulation and microcapsules fabrication by layer-by-layer polyelectrolyte adsorption.

Lactate dehydrogenase in interpolyelectrolyte complex. Function and stability.
Bobreshova ME, Sukhorukov GB, Saburova EA, Elfimova LI, Shabarchina LI and Sukhorukov BI. *Biofizika* vol. 44, (5) 819-820.

From polymeric films to nanoreactors.

Lactate dehydrogenase in interpolyelectrolyte complex. Function and stability.
Bobreshova ME, Sukhorukov GB, Saburova EA, Elfimova LI, Shabarchina LI and Sukhorukov BI. *Biofizika+* vol. 44, (5) 813-820.

Lactate dehydrogenase in an interpolyelectrolyte complex. Function and stability.
Bobreshova M, Sukhorukov GB, Saburova EA, Elfimova LI, Shabarchina LI and Sukhorukov BI. *Biofizika* vol. 44, (5) 813-820.

Microencapsulation of organic solvents in polyelectrolyte multilayer micrometer-sized shells.

Hollow Polyelectrolyte Shells: Exclusion of Polymers and Donnan Equilibrium.

Polyelektrolytkapseln im submikrometer- und mikrometerbereich.
Donath E, Sukhorukov GB and Möhwald H. *Nachrichten Aus Der Chemie* vol. 47, (4) 400-404.

Submicrometric and micrometric polyelectrolyte capsules.
Donath E, Sukhorukov GB and Mohwald H. *Nachr Chem Tech Lab* vol. 47, (4) 400-+.

Micro- and nanoencapsulation via layer-by-layer adsorption of macromolecules on colloid particles.

1998

Stepwise polyelectrolyte assembly on particle surfaces: A novel approach to colloid design.
Fabrication of micro- and nanocapsules by means of step-wise adsorption of polyelectrolytes.  

Layer-by-layer self assembly of polyelectrolytes on colloidal particles.  

The dual stabilizing and destabilizing effect of decylamine on DNA structure and stability.  
Sukhorukov BI, Kazaryan RL, Petrov AI and Sukhorukov GB. *Biofizika* vol. 43, (3) 427-432.

The Dual Stabilizing and Destabilizing Effect of Decylamine on DNA Structure and Stability.  
Sukhorukov BI, Kazaryan RL, Petrov AI and Sukhorukov GB. *Biofizika* vol. 43, (3) 431-432.

Novel hollow polymer shells by colloid-templated assembly of polyelectrolytes.  

1997

Protein architecture: Assembly of ordered films by means of alternated adsorption of oppositely charged macromolecules.  
Lvov YM and Sukhorukov GB. *Membrane and Cell Biology* vol. 11, (3) 277-303.

Protein architecture: Assembly of ordered films by means of alternated adsorption of opposite charged macromolecules.  
Lvov YM and Sukhorukov GB. *Biologicheskie Membrany* vol. 14, (3) 248-250.

Spectroscopic study of thin multilayer films of the complexes of nucleic acids with cationic amphiphiles and polycations: Their possible use as sensor elements.  
Montrel MM, Sukhorukov GB, Petrov AI, Shabarchina LI and Sukhorukov BI. *Sensors and Actuators, B: Chemical* vol. 42, (3B) 225-231.

Protein architecture: Assembly of ordered films by means of alternated adsorption of opposite charged macromolecules.  
Lvov YM and Sukhorukov GB. *Biol Membrany* vol. 14, (3) 229-250.

1996

Optical properties and the structure of Langmuir-Blodget films of the complexes of nucleic acids with lipids and synthetic amphiphilic molecules. II. IR spectra, hydration and conformational state of DNA in a multilayer Langmuir film of DNA complex with o.  
Sukhorukov BI, Sukhorukov GB, Shabarchina LI and Montrel MM. *Biofizika* vol. 41, (5).

Multilayer films containing immobilized nucleic acids. Their structure and possibilities in biosensor applications.  
Sukhorukov GB, Montrel MM, Petrov AI, Shabarchina LI and Sukhorukov BI. *Biosensors and Bioelectronics* vol. 11, (9) 913-922.

Optical properties and the structure of Langmuir-Blodgett films of the complexes of nucleic acids with lipids and synthetic amphiphilic molecules. II. IR spectra, hydration and conformational state of DNA in a multilayer Langmuir film of DNA complex with o.  
Sukhorukov BI, Sukhorukov GB, Shabarchina LI and Montrel MM. *Biofizika* vol. 41, (5) 1016-1025.

1995

Spectroscopic study of thin multilayer films of the complexes of nucleic acids with cationic amphiphiles and polycations: their possible use as sensor elements.  

X-ray and infrared study of Langmuir-Blodgett films of the complexes between nucleic acids and aliphatic amines.  
1994

Optical properties and structure of lamguir films of complexes on nucleic acids with lipids and synthetic amphiphilic molecules - I. Infrared spectra, structure and hydration of a multilayer Langmuir film of a complex of polyuridylic acid with octadecyla.
Sukhorukov VI, Montrel' MM, Sukhorukov GB and Shabarchina LI. *Biophysics* vol. 39, (2) 273-282.

Fabrication of thin crystal films of organic compounds.

SUKHORUKOV BI, MONTREL MM, SUKHORUKOV GB and SHABARCHINA LI. *Biofizika+* vol. 39, (2) 302-311.

1993

Time-dependent self-organisation of immunoglobulins IgG and IgM monolayers at the air-water interface.
Sukhorukov GB, Dubrovsky TB, Kaushina VA, Lapuk VA and Khurgin YI. *Progress in Colloid & Polymer Science* vol. 93.,

Preparation and study of Langmuir films of nucleic acid and octadecylamine complexes.
Sukhorukov GB, Erokhin VV and Tronin AI. *Biofizika* vol. 38, (2) 257-262.

FORMATION AND INVESTIGATION OF LANGMUIR FILMS OF NUCLEIC-ACIDS - OCTADECYLAMINE COMPLEXES.
SUKHORUKOV GB, EROKHIN VV and TRONIN AY. *Biofizika+* vol. 38, (2) 257-262.

Assembly of Thin Films by Means of Successive Deposition of Alternate Layers of DNA and Poly(allylamine).