



## Curriculum Vitae



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<b>Nationality</b>	Romanian
<b>Date/place of birth</b>	January 26, 1956 in Tiganasi - Iasi, Romania
<b>Education</b>	Ph.D. (April 1996), Romanian Academy, "Petru Poni" Institute of Macromolecular Chemistry, Iasi, Romania; topic: Synthesis of the siloxane polymers and copolymers by heterogeneous catalysis. B.S. (July 1981), Department of Macromolecular Compounds Technology, Faculty of Industrial Chemistry, "Gh. Asachi", Polytechnic Institute of Iasi, Romania.
<b>Professional Experience</b>	1997-present: "Petru Poni" Institute of Macromolecular Chemistry, Inorganic Polymers Department, Iasi - Senior Researcher, Team Leader, PhD promoter; 1990-1997: "Petru Poni" Institute of Macromolecular Chemistry, Inorganic Polymers Department, Iasi – Researcher; 1989-1990: "Petru Poni" Institute of Macromolecular Chemistry, Inorganic Polymers Department, Iasi – Engineer; 1981-1989: "FIRMELBO" Spinning Mill - Botosani, Romania: Probationer Engineer, Team Leader, Quality Technologist.
<b>Present Position</b>	Senior researcher (CSI), Head of Department of Inorganic Polymers, "Petru Poni" Institute of Macromolecular Chemistry, Iasi, PhD supervisor (six doctorates completed, three PhD students in internship).
<b>Publications</b>	248 scientific articles (239 in journals with impact index), an author book, two editor books and eight book chapters, eight invention patents (one international <i>a European patent</i> and five Romanian patents).
<b>Scientometric indicators</b>	2385 citations, h-index=23 (Web of Science, 239 documents); 2829 citations, h-index=26 (Google Scholar, 299 documents).
<b>Awards, membership of professional organizations</b>	<ul style="list-style-type: none"><li>●The Romanian Academy Prize for Chemistry, "C. D. Nenitescu", 1996;</li><li>●Gold Medal at International Exhibition of Inventions Scientific Research and New Technologies, Inventika 2009, 13th edition, October 2009, Bucuresti, Romania for the Patent "Polymer-based microactuator";</li><li>●Gold Medal at Innovation National Exhibition CHIM-INVENT, 20-22 October, 2005, Iasi, Romania;</li><li>●Diploma and Medal "Petru Poni" at National Salon of Inventions CHIMINVENT 2013, Iasi, Romania;</li><li>●Diploma and Medal "CHIMINVENT" Salon of Inventions National CHIMINVENT 2013, Iasi, Romania;</li><li>●Gold Medal at The 22<sup>nd</sup> International Exhibition of Inventions "INVENTICA 2018",</li></ul>

Iasi, June 27-29, 2018;

"Petru Poni" Medal and the Diploma of Honor for outstanding contributions to the promotion of chemistry awarded by the Romanian Chemistry Society, July 2019.

2000 - present, member of the Romanian Chemical Society.

**Areas of interest**

- Polymers and polymeric materials: polymers and copolymers (synthesis, characterization, processing, chemical modification); organic/inorganic hybrid materials; networks and composites; nanostructured polymeric materials;
- Metal-containing materials: clusters and metal oxide nanoparticles, coordination compounds/polymers and metal-organic frameworks;
- Development, formulation and optimization of dielectric elastomers, especially on the basis of inorganic polymers, and evaluating the operation performance of the electromechanical transducers (actuators and power generators) as well as the sensors built on them;
- Interdisciplinary fields ranging between polymer chemistry and physics, medicine, electrochemistry, catalysis, magnetism, environmental protection, medicine, biology, electronics, construction, energy, etc.

**Professional skills**

- Polymerization techniques: ionic, radicalic, ring-opening polymerization, polycoordination, polycondensation, sol-gel;
- Synthesis of siloxane monomers, polymers and copolymers by various procedures;
- Processing of the silicone polymers as rubbers, oils, adhesives;
- Modifying of the silicones;
- Preparing of the polymeric materials for applications in various fields: dentistry, textiles, leather, electronic, construction, energy;
- Preparation of organic-inorganic copolymers; segmented and graft copolymers having various internal functions (ester, ether, amide, imide, anhydride, azomethine, azo) able to develop biphasic morphology, photochemical, surface, liquid crystalline, controlled degradability properties;
- Preparation of coordination compounds and metal-organic frameworks.
- Preparation of organic/inorganic hybrid materials (composites, networks, hybrids).

**Language**

Mother tongue: Romanian; Other languages: English, Russian

**Organisational skills and competences**

Project management;  
Coordination of the scientific activities for a research team (8-14 members) in the period 1996-present; Head of Department of Inorganic Polymers since 2014.

**Involvement in research projects**

**36 projects:**

- 12 projects as project coordinator (between them a project financed by European Regional Development Fund);
- 10 projects as partner team leader (between them a European FP7 project and a COST project - National leader, member in management committee for COST Action MP1003 European Scientific Network for Artificial Muscle, ESNAM);
- the other as member;
- Seven applicative research projects (team member).

The main research grants:

- Soft electromechanical transducers based on 3D printed silicones, 3DETSi,

Experimental demonstration project, PN-III-P2-2.1-PED-2019-3652, Contract 320PED/2020, 2020-2022;

●Metal-organic networks with finely controlled hydrophobicity using silicone chemistry, SiMOFs, Research project: PN-III-P4-ID-PCE-2016-0642, Contract 114/2017, 2017-2019;

●Silicone-based energy conversion units built up by green chemistry, Experimental demonstration project, GrEENergy, PN-III-P2-2.1-PED-2016-0188, Contract 68PED/2017, 2017-2018;

●New coordination networks containing polyfunctional flexible bridges, Exploratory Research Projects - PN-II-ID-PCE-2012-4, Contract 53/2.09.2013, 2013-2016;

●Collaborative project FP7-Energy-2012-1-2STAGE, New mechanisms and concepts for exploiting electroactive Polymers for Wave Energy Conversion, PolyWEC, GA 309139, 2012-2016;

●Synthesis and study of the polymeric metallocloxanes – new materials for catalysis and nanosciences (POLISILMET), SOP IEC-A2-O2.1.2-2009-2, ID 570;

●Multifunctional nanostructured silicone materials (NANOSIMAT), Contract CEEX-MATNANTECH 52/2006 (2006-2008).

#### **Other activities**

Peer-review activity for national (UEFISCDI) and international (INTAS, ERA.NET RUS, National Science Centre - Poland, Czech Science Foundation) programs/projects;

Peer-review activity for scientific journals (more than 150 articles reviewed in the last 10 years);

Member of the Examination Board for 16 doctoral theses;

Member of the Academic Advisory Commission for the North-East Regional Development Agency;

Member CNATDCU in section: Chemical engineering, medical engineering, materials science and nanomaterials in 2016-2020 mandate; currently – at Chemistry section.

August 24, 2020



## Articole publicate (ultimii cinci ani)

1. Damoc M, Stoica AC, Macsim AM, Dascalu M, Zaltariov MF, Cazacu M. Salen-type Schiff bases spaced by the highly flexible and hydrophobic tetramethyldisiloxane motif. Some synthetic, structural and behavioral particularities. *J Mol Liq.* 2020;316:113852. doi:10.1016/j.molliq.2020.113852
2. Fagadar-Cosma E, Plesu N, Lascu A, et al. Novel platinum-porphyrin as sensing compound for efficient fluorescent and electrochemical detection of H<sub>2</sub>O<sub>2</sub>. *Chemosensors.* 2020;8(2). doi:10.3390/CHEMOSENSORS8020029
3. Shova S, Vlad A, Damoc M, et al. Nanoscale Coordination Polymer of Dimanganese(II) as Infinite, Flexible Nanosheets with Photo-Switchable Morphology. *Eur J Inorg Chem.* 2020;2020(21):2043-2054. doi:10.1002/ejic.202000098
4. Shova S, Tiron V, Vlad A, et al. Permethylated dinuclear Mn(III) coordination nanostructure with stripe-ordered magnetic domains. *Appl Organomet Chem.* 2020;(July):1-11. doi:10.1002/aoc.5957
5. Gradinaru I, Ciubotaru B-I, Zaltariov M-F, Cazacu M. Comparative Study on the Characteristics of Silicone Elastomers used in Dental Impression Techniques. *IOP Conf Ser Mater Sci Eng.* 2020;877:012036. doi:10.1088/1757-899x/877/1/012036
6. Barga A, Cazacu M, Dascalu M, Macsim A-M, Soroceanu A, Macsim IF. Synthesis, structural characterization and properties evaluation of two new zwitterionic siloxane compounds. *Polyhedron.* 2020;179. doi:10.1016/j.poly.2020.114356
7. Tugui C, Stiubianu GT, Serbulea MS, Cazacu M. Silicone dielectric elastomers optimized by crosslinking pattern-a simple approach to high-performance actuators. *Polym Chem.* 2020;11(19):3271-3284. doi:10.1039/d0py00223b
8. Gavriș SP, Shova S, Cazacu M, Dascalu M, Lampeka YD. Syntheses and crystal structures of the one-dimensional coordination polymers formed by  $\{[Ni(cyclam)](2+)\}$  cations and 1,3-bis(3-carboxypropyl)tetramethyldisiloxane anions in different degrees of deprotonation. *ACTA Crystallogr Sect E-CRYSTALLOGRAPHIC Commun.* 2020;76(3):446+. doi:10.1107/S2056989020002327
9. Iacob M, Airinei A, Asandulesa M, et al. Silicone elastomers filled with rare earth oxides. *Mater Res EXPRESS.* 2020;7(3). doi:10.1088/2053-1591/ab7a5e
10. Barga A, Zaltariov MF, Vlad A, et al. Keto-enol tautomerism in new silatranes Schiff bases tailed with different substituted salicylic aldehyde. *Arab J Chem.* 2020;13(1):3100-3111. doi:10.1016/j.arabjc.2018.09.001
11. Cazacu M, Turcan-Trofin G-O, Vlad A, et al. Hydrophobic, amorphous metal-organic network readily prepared by complexing the aluminum ion with a siloxane spaced dicarboxylic acid in aqueous medium. *J Appl Polym Sci.* 2019;136(9). doi:10.1002/app.47144
12. Racles C, Cazacu M, Zaltariov M, Iacob M, Butnaru M. Siloxane-based compounds with tailored surface properties for health and environment. *PHOSPHORUS SULFUR SILICON Relat Elem.* 2019;194(10, SI):972-977. doi:10.1080/10426507.2019.1630405
13. Tugui C, Ursu C, Zaltariov M-F, et al. Silver thin films generated by Pulsed Laser Deposition on plasma-treated surface of silicones to get dielectric elastomer transducers. *Surf Coat Technol.* 2019;358:282-292. doi:10.1016/j.surfcoat.2018.11.009
14. Tugui C, Serbulea M-S, Cazacu M. Preparation and characterisation of stacked planar actuators. *Chem Eng J.* 2019;364:217-225. doi:10.1016/j.cej.2019.01.150
15. Iacob M, Racles C, Dascalu M, Tugui C, Lozan V, Cazacu M. Nanomaterials Developed by Processing Iron Coordination Compounds for Biomedical Application. *J Nanomater.* 2019. doi:10.1155/2019/2592974
16. Shova S, Vlad A, Cazacu M, et al. Dinuclear manganese(III) complexes with bioinspired coordination

- and variable linkers showing weak exchange effects: a synthetic, structural, spectroscopic and computation study. *Dalt Trans.* 2019;48(18):5909-5922. doi:10.1039/c8dt04596h
17. Turcan-Trofin G-O, Asandulesa M, Balan-Porcarasu M, et al. Linear and cyclic siloxanes functionalized with polar groups by thiol-ene addition: Synthesis, characterization and exploring some material behaviour. *J Mol Liq.* 2019;282:187-196. doi:10.1016/j.molliq.2019.03.005
  18. Turcan-Trofin G-O, Zaltariov M-F, Roman G, et al. Amphiphilic silicone-bridged bis-triazoles as effective, selective metal ligands and biologically active agents in lipophilic environment. *J Mol Liq.* 2019;294. doi:10.1016/j.molliq.2019.111560
  19. Turcan-Trofin G-O, Zaltariov M-F, Iacob M, et al. Copper(II) complexes with spherical morphology generated in one step by amphiphilic ligands: in situ view of the self-assembling, characterization, catalytic activity. *COLLOIDS SURFACES A-PHYSICOCHEMICAL Eng Asp.* 2019;580. doi:10.1016/j.colsurfa.2019.123756
  20. Tugui C, Tiron V, Dascalu M, Sacarescu L, Cazacu M. From ultra-high molecular weight polydimethylsiloxane to super-soft elastomer. *Eur Polym J.* 2019;120. doi:10.1016/j.eurpolymj.2019.109243
  21. Darvasiova D, Rapta P, Zalibera M, et al. EPR and UV-vis-NIR Spectroelectrochemistry of Five-Coordinate Manganese(III) Complex with a Salen Type Ligand, a Catalyst of Secondary Alcohol Oxidation. In: Navratil, T and Fojta, M and Schwarzova, K, ed. *PROCEEDINGS OF THE INTERNATIONAL CONFERENCE MODERN ELECTROCHEMICAL METHODS XXXVIII.* ; 2018:28-31.
  22. Turcan-Trofin G-O, Avadanei M, Shova S, Vlad A, Cazacu M, Zaltariov M-F. Metallo-supramolecular assemblies of dinuclear Zn(II) and Mn(II) secondary building units (SBUs) and a bent silicon dicarboxylate ligand. *Inorganica Chim Acta.* 2018;483:454-463. doi:10.1016/j.ica.2018.08.027
  23. Zaltariov M-F, Bele A, Vasiliu L, et al. Assessment of chemicals released in the marine environment by dielectric elastomers useful as active elements in wave energy harvesters. *J Hazard Mater.* 2018;341:390-403. doi:10.1016/j.jhazmat.2017.07.068
  24. Vlad A, Avadanei M, Shova S, Cazacu M, Zaltariov M-F. Synthesis, structural characterization and properties of some novel siloxane-based bis-Schiff base copper(II), nickel(II) and manganese(II) complexes. *Polyhedron.* 2018;146:129-135. doi:10.1016/j.poly.2018.02.029
  25. Bele A, Tugui C, Sacarescu L, et al. Ceramic nanotubes-based elastomer composites for applications in electromechanical transducers. *Mater Des.* 2018;141:120-131. doi:10.1016/j.matdes.2017.12.039
  26. Bele A, Tugui C, Asandulesa M, et al. Conductive stretchable composites properly engineered to develop highly compliant electrodes for dielectric elastomer actuators. *SMART Mater Struct.* 2018;27(10). doi:10.1088/1361-665X/aad977
  27. Shova S, Vlad A, Cazacu M, et al. A five-coordinate manganese(III) complex of a salen type ligand with a positive axial anisotropy parameter D. *Dalt Trans.* 2017;46(35):11817-11829. doi:10.1039/c7dt01809f
  28. Zaltariov MF, Hammerstad M, Arabshahi HJ, et al. New Iminodiacetate -Thiosemicarbazone Hybrids and Their Copper(II) Complexes Are Potential Ribonucleotide Reductase R2 Inhibitors with High Antiproliferative Activity. *Inorg Chem.* 2017;56(6):3532-3549. doi:10.1021/acs.inorgchem.6b03178
  29. Cojocar S, Borhan A, Mykhailovych V, et al. NANOSIZED NiFe<sub>2</sub>O<sub>4</sub>/KAOLINITE COMPOSITE AS ADSORBENT FOR ORGANIC DYES. *Rev Roum Chim.* 2017;62(8-9):687-698.
  30. Iacob M, Tugui C, Tiron V, et al. Iron oxide nanoparticles as dielectric and piezoelectric enhancers for silicone elastomers. *SMART Mater Struct.* 2017;26(10). doi:10.1088/1361-665X/aa867c
  31. Vlad A, Cazacu M, Vornicu N, Shova S, Zaltariov M-F. SYNTHESIS, STRUCTURAL CHARACTERIZATION AND ANTIMICROBIAL ACTIVITY OF A NEW BIS-AZOMETHINE WITH TRIMETHYLSILYL TERMINAL GROUPS. *Rev Roum Chim.* 2017;62(8-9):661-667.

32. Tugui C, Ursu C, Sacarescu L, et al. Stretchable Energy Harvesting Devices: Attempts To Produce High Performance Electrodes. *ACS Sustain Chem Eng.* 2017;5(9):7851-7858. doi:10.1021/acssuschemeng.7b01354
33. Tugui C, Bele A, Tiron V, Hamciuc E, Varganici CD, Cazacu M. Dielectric elastomers with dual piezo-electrostatic response optimized through chemical design for electromechanical transducers. *J Mater Chem C.* 2017;5(4):824-834. doi:10.1039/c6tc05193f
34. Racles C, Dascalu M, Bele A, et al. All-silicone elastic composites with counter-intuitive piezoelectric response, designed for electromechanical applications. *J Mater Chem C.* 2017;5(28):6997-7010. doi:10.1039/c7tc02201h
35. Shova S, Cazacu M, Novitchi G, Zoppellaro G, Train C, Arion VB. An iron(III)-centred ferric wheel Fe subset of{Fe-6} with a siloxane-based bis-salicylidene Schiff base. *Dalt Trans.* 2017;46(6):1789-1793. doi:10.1039/c7dt00141j
36. Zaltariov M-F, Vieru V, Zalibera M, et al. A Bis(mu-chlorido)-Bridged Cobalt(II) Complex with Silyl-Containing Schiff Base as a Catalyst Precursor in the Solvent-Free Oxidation of Cyclohexane. *Eur J Inorg Chem.* 2017;(37):4324-4332. doi:10.1002/ejic.201700875
37. Bele A, Stiubianu G, Vlad S, et al. Aging behavior of the silicone dielectric elastomers in a simulated marine environment. *RSC Adv.* 2016;6(11):8941-8955. doi:10.1039/c5ra22780a
38. Dumitriu A-M-C, Balan M, Bargan A, Shova S, Varganici C-D, Cazacu M. Synthesis of functionalized silica nanostructure: Unexpected conversion of cyanopropyl group in chloropropyl one during HCL-catalysed hydrolysis of the corresponding triethoxysilane. *J Mol Struct.* 2016;1110:150-155. doi:10.1016/j.molstruc.2016.01.043
39. Zaltariov M-F, Cojocaru C, Shova S, Sacarescu L, Cazacu M. Synthesis, structural characterization and quantum chemical studies of silicon-containing benzoic acid derivatives. *J Mol Struct.* 2016;1120:302-316. doi:10.1016/j.molstruc.2016.05.038
40. Racles C, Ignat M, Bele A, Dascalu M, Lipcinski D, Cazacu M. Silicone-based elastic composites able to generate energy on micromechanical impulse. *SMART Mater Struct.* 2016;25(8). doi:10.1088/0964-1726/25/8/085024
41. Iacob M, Racles C, Tugui C, et al. From iron coordination compounds to metal oxide nanoparticles. *BEILSTEIN J Nanotechnol.* 2016;7:2074-2087. doi:10.3762/bjnano.7.198
42. Vlad A, Zaltariov M-F, Shova S, et al. New Zn(II) and Cu(II) complexes with in situ generated N2O2 siloxane Schiff base ligands. *Polyhedron.* 2016;115:76-85. doi:10.1016/j.poly.2016.04.038
43. Zaltariov M-F, Cazacu M, Sacarescu L, et al. Oxime-Bridged Mn-6 Clusters Inserted in One-Dimensional Coordination Polymer. *Macromolecules.* 2016;49(17):6163-6172. doi:10.1021/acs.macromol.6b01149
44. Stiubianu G, Dumitriu A-MC, Varganici C-D, et al. Changes induced in the properties of dielectric silicone elastomers by the incorporation of transition metal complexes. *HIGH Perform Polym.* 2016;28(8):915-926. doi:10.1177/0954008315610393
45. Tugui C, Vlad S, Iacob M, Varganici CD, Pricop L, Cazacu M. Interpenetrating poly(urethane-urea)-polydimethylsiloxane networks designed as active elements in electromechanical transducers. *Polym Chem.* 2016;7(15):2709-2719. doi:10.1039/c6py00157b
46. Bele A, Dascalu M, Tugui C, et al. Dielectric silicone elastomers filled with in situ generated polar silsesquioxanes: Preparation, characterization and evaluation of electromechanical performance. *Mater Des.* 2016;106:454-462. doi:10.1016/j.matdes.2016.06.010
47. Dumitriu A-M-C, Bargan A, Balan M, Varganici C-D, Shova S, Cazacu M. SYNTHESIS AND CHARACTERIZATION OF OCTAKIS(3-CHLOROAMMONIUMPROPYL)OCTASILSESQUIOXANE. *Rev Roum Chim.* 2016;61(4-5):385-393.
48. Lazar MM, Varganici C-D, Cazacu M, Dragan ES. Cationic hybrids from poly(N,N-dimethylaminoethyl methacrylate) covalently crosslinked with chloroalkyl silicone derivatives

- effective in binding anionic dyes. *J Appl Polym Sci*. 2016;133(37). doi:10.1002/app.43942
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  50. Vlad A, Zaltariov M-F, Shova S, Novitchi G, Train C, Cazacu M. Metal-organic frameworks based on tri- and penta-nuclear manganese(II) secondary building units self-assembled by a V-shaped silicon-containing dicarboxylate. *RSC Adv*. 2016;6(44):37412-37423. doi:10.1039/c6ra03969c
  51. Stiubianu G, Soroceanu A, Varganici C-D, Tugui C, Cazacu M. Dielectric elastomers based on silicones filled with transitional metal complexes. *Compos PART B-ENGINEERING*. 2016;93:236-243. doi:10.1016/j.compositesb.2016.03.005
  52. Soroceanu A, Vacareanu L, Vornicu N, Cazacu M, Rudic V, Croitori T. Assessment of some application potentials for copper complexes of the ligands containing siloxane moiety: Antimicrobial, antifungal, antioxidant and redox activity. *Inorganica Chim Acta*. 2016;442:119-123. doi:10.1016/j.ica.2015.12.006
  53. Zaltariov M-F, Cazacu M, Avadanei M, et al. Synthesis, characterization and antimicrobial activity of new Cu(II) and Zn(II) complexes with Schiff bases derived from trimethylsilyl-propyl-p-aminobenzoate. *Polyhedron*. 2015;100:121-131. doi:10.1016/j.poly.2015.07.030
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