



## Dr. Madalin Damoc

**Research assistant**

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### ▼ Education

2011-2015 - „Stefan cel Mare” Pedagogical Highschool from Bacau, Section: Natural Sciences

2015-2018 - Bachelor’s degree, Section: Technological Biochemistry

“High-performance liquid chromatography for analysing some active constituents of medicines”.

Thesis supervisor: Prof. univ. dr. habil. Cecilia Arsene

2020-2023 - PhD, Section: Chemistry. Successfully defended on 28.07.2023.

Proligands and coordination compounds having flexible and hydrophobic moieties, capable of self-organization. PhD Supervisor: CSI Dr. Maria Cazacu.

### ▼ Experience

01.11.2018/Current-Research Assistant, „Petru Poni” Institute of Macromolecular Chemistry, Grigore Ghica-Voda Alley, 41 A, 700487, Iasi, Romania

Synthesis of ligands containing silane/siloxane moieties and their metal complexes; Evaluation of spectral, luminescence, colloid, and thermo-mechanical properties of the new compounds. Involved in the team of two projects: “Emerging 2D materials based on two-dimensional permethylated metal-organic networks, PerMONSil, Proiect PN-III-P4-ID-PCE-2020-2000, Contract 207/2021 (2021–2023)” and “Recovery of platinum-group metals from spent automotive catalysts using chemical methods, ECOTECH-GMP, Contract 76PCCDI/2018 (2018–2020)”.

### Research topics

Synthesis of ligands containing silane/siloxane moieties and their metal complexes; Evaluation of spectral, luminescence, colloid, and thermo-mechanical properties of the new compounds. Organic synthesis (Schiff bases, ethers, thioethers, Click chemistry, alkylation) and inorganic synthesis (metal complexes of 3d series and gold complexes); Characterization of organic/inorganic compounds (FTIR, UV-VIS, NMR, 2D NMR, XRD, PXRD, MS, elemental analysis); Evaluation of optical properties (UV-VIS, fluorescence, phosphorescence, linear dichroism, time-resolved fluorescence; transient-absorption spectroscopy); Thermal analysis (DSC, TGA); Colloidal properties and their assessment (Wihelmy method, DLS, liquid crystals, self-assembly, POM, dielectric spectroscopy, zeta potential, TEM); Chromatography (TLC, column chromatography, HPLC); Evaluation of acido-basic interactions (Job and Hildebrand-Benesi methods).

### ▼ Published Papers

1. Damoc, M.\*; Tiron, V.; Tugui, C.; Varganici, C. D.; Stoica, A. -C.; Novitchi, C.; Dascalu, M.; Cazacu, M.\* (2023): Ferronematic Co(II) complex: an active filler for magnetically actuated soft materials. *Small*, 2307006. <https://doi.org/10.1002/sml.202307006>.
2. Farcas, A.\*; Damoc, M.; Asandulesa, M.; Aubert, P.H.; Tigoianu, R.I.; Ursu, L.E. (2023): The straightforward approach of tuning the photoluminescence and electrical properties of encapsulated PEDOT end-capped by pyrene. *J. Mol. Liq.*, 376, 121461. <https://doi.org/10.1016/j.molliq.2023.121461>.

3. Stoica, A.C.; Damoc, M.; Shova, S.; Novitchi, G.; Dascalu, M.;\* Cazacu, M.\* (2023): A Manganese(II) 3D Metal–Organic Framework with Siloxane-Spaced Dicarboxylic Ligand: Synthesis, Structure, and Properties. *Inorganics*, 11, 21. <https://doi.org/10.3390/inorganics11010021>.
4. Damoc, M., Tigoianu, R.I., Stoica, A.C., Măcsim, A.M., Dascalu, M., Shova, S., Cazacu, M.\* (2023): Micellization Turned on Dual Fluorescence and Room Temperature Phosphorescence by Pseudo-ESIPT in Thiadiazole Derivatives. *J. Phys. Chem. A*, 127 (1), 99-109. <https://doi.org/10.1021/acs.jpcc.2c07651>.
5. Stoica, A.C., Damoc, M., Cojocaru, C., Nicolescu, A., Shova, S., Dascalu, M., Cazacu, M.\* (2022): Some Theoretical and Experimental Evidence for Particularities of the Siloxane Bond. *Molecules*, 27, 8563. <https://doi.org/10.3390/molecules27238563>.
6. Ciubotaru, B.I., Dascalu, M., Zaltariov, M.F.,\* Măcsim, A.M., Damoc, M., Bele, A., Tugui, C., Varganici, C.D., Cazacu, M.\* (2022): Catalyst-free crosslinked sustainable functional silicones by supramolecular interactions. *React. Funct. Polym.*, 181, 105419. <https://doi.org/10.1016/j.reactfunctpolym.2022.105419>.
7. Damoc, M., Stoica, A.C., Blaj, D.A., Măcsim, A.M., Dascalu, M., Cojocaru, C., Shova, S., Cazacu, M.\* (2022): Fourteen-member silacycle built by cascade reactions induced by a platinum catalyst. *J. Mol. Struct.*, 1269, 133760. <https://doi.org/10.1016/j.molstruc.2022.133760>.
8. Stoica, A. C.; Damoc, M.; Baltag, L.; Măcsim, A. M.; Nicolescu, A.; Dinu, M.V.; Ionita, G.; Cazacu, M.\* (2021): One pot reduction hydrophobization of heterogenized platinum with 1,1,3,3-tetramethyldisiloxane. *Appl. Organomet. Chem.*, 36(1), 6485. <https://doi.org/10.1002/aoc.6485>.
9. Stoica, A. C.; Damoc, M.; Tiron, V.; Dascalu, M.; Coroaba, A.; Shova, S.;\* Cazacu, M.\* (2021): Silanol-functionalized tetranuclear copper complex and its nanoscale-heterogenization by immobilization on glass surface from solution. *J. Mol. Liq.*, 344(2-3), 117742. <https://doi.org/10.1016/j.molliq.2021.117742>.
10. Stoica, A. C.; Damoc, M.; Zaltariov, M. F.; Racles, C.; Cazacu, M.\* (2021): Two-Dimensional Coordination Polymers Containing Permethylated Motifs - Promising Candidates for 2D Emerging Materials. Structural, Behavioral and Functional Particularities. *React. Funct. Polym.*, 168, 105039. <https://doi.org/10.1016/j.reactfunctpolym.2021.105039>.
11. Damoc, M.; Stoica, A. C.; Dascalu, M.; Asandulesa, M.; Shova, S.;\* Cazacu, M.\* (2021): Dual Crystalline-Amorphous Salen-Metal Complexes Behave like Nematic Droplets with AIEgens Vistas. *Dalton Trans.*, 50 (39), 13841–13858. <https://doi.org/10.1039/D1DT01980E>.
12. Damoc, M.; Stoica, A. C.; Măcsim, A. M.; Dascalu, M.; Zaltariov, M. F.; Cazacu, M.\* (2020): Salen-Type Schiff Bases Spaced by the Highly Flexible and Hydrophobic Tetramethyldisiloxane Motif. Some Synthetic, Structural and Behavioral Particularities. *J. Mol. Liq.*, 316, 113852. <https://doi.org/10.1016/j.molliq.2020.113852>.
13. Racles, C.;\* Zaltariov, M. F.; Damoc, M.; Măcsim, A. M.; Iacob, M.; Sacarescu, L. (2020): Three Reactions, One Catalyst: A Multi-Purpose Platinum(IV) Complex and Its Silica-Supported Homologue for Environmentally Friendly Processes. *Appl. Organomet. Chem.*, 34 (3), 1–15. <https://doi.org/10.1002/aoc.5422>.
14. Shova, S.; Vlad, A.; Damoc, M.; Tiron, V.; Dascalu, M.; Novitchi, G.; Ursu, C.; Cazacu, M.\* (2020): Nanoscale Coordination Polymer of Dimanganese(II) as Infinite, Flexible Nanosheets with Photo-Switchable Morphology. *Eur. J. Inorg. Chem.*, 2020 (21), 2043–2054. <https://doi.org/10.1002/ejic.202000098>.
15. Shova, S.; Tiron, V.; Vlad, A.; Novitchi, G.; Dumitrescu, D. G.; Damoc, M.; Zaltariov, M. F.; Cazacu, M.\* (2020): Permethylated Dinuclear Mn(III) Coordination Nanostructure with Stripe-Ordered Magnetic Domains. *Appl. Organomet. Chem.*, 34 (12), 1–11. <https://doi.org/10.1002/aoc.5957>.

**Presentations: 9 oral communications and 5 poster presentations at national and international conferences.**

### **Awards and honors:**

1. „Diploma of Merit” for remarkable performances during the 2018-2019 academic year at "Alexandru Ioan Cuza" University from Iasi, Faculty of Chemistry.
2. “Diploma of Merit” for the presentation of "Salen Type Schiff Bases of 1,3-bis(3-aminopropyl)tetramethyldisiloxane and their metal complexes" and "Pt(IV) complex with multiple catalytic activities"; Progresses in the Science of Organic and Macromolecular Compounds, 2-4 October 2019, Iasi, Romania.
3. ACS Best Presentation Award for the presentation "Siloxane/silane derivatives and their gold complexes: interfacial phenomena based on photoluminescence"; Progress in Organic and Macromolecular Compounds, 2021, Iasi, Romania.
4. The best oral presentation award for “A ferromagnetic Co(II) coordination compound suitable as active filler for magnetically actuated materials” Progress in Organic and Macromolecular Compounds, 29th Edition, October 4-6, 2023, Iasi, Romania.

### **Participation in thematic schools:**

1. The International School on Innovations in Homogeneous and Supported Homogeneous Catalysis, 25-28 April 2023, București, România.
2. Vibrational and Electronic spectroscopies applied to the study of reaction mechanisms – MECAREACT, 18-23 June 2023, Paris, France.

### **Projects**

Involved in the team of two projects: “Emerging 2D materials based on two-dimensional permethylated metal-organic networks, PerMONSil, Proiect PN-III-P4-ID-PCE-2020-2000, Contract 207/2021 (2021–2023)” and “Recovery of platinum-group metals from spent automotive catalysts using chemical methods, ECOTECH-GMP, Contract 76PCCDI/2018 (2018–2020)”.

### **Research internships:**

8 December 2019/7 January 2020 – Institute of Organic Synthesis NAS of Ukraine, Kyiv.  
28 August 2021/27 September 2021 - Institute of Organic Synthesis NAS of Ukraine, Kyiv.

### **Visibility**

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