Curriculum vitae | Institució Catalana de Recerca i Estudis Avançats

César Rodriguez-Emmenegger

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ICREA Research Professor

Bioinspired Interactive Materials and Protocellular Systems

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Brief Research Summary and Career Evolution

Mastering the communication between synthetic interfaces and tissues is one of the grand challenges of contemporary biomedical systems that our aging society demands. I focus on introducing new concepts for biointerfaces that can harbor selective interactions with surrounding living tissue to control preprogrammed responses. For example, my group designed coatings that upon sensing the presence of dangerous thrombi, interacts with blood, and switch on mechanisms to digest them. We also developed synthetic macrophage-mimetic microrobots capable of endocytosing pathogens such as bacteria and various viruses including SARS-CoV-2. Like Nature, we synthesize macromolecular building blocks and encode in their structure, architecture, and topology the intermolecular forces that control their hierarchical self-assembly into interfaces and material capable to selectively and actively alter their properties to environmental cues. We investigate how to achieve superselective interfaces by balancing repellency in aqueous systems with multivalent and cooperative attractive interactions. The breadth of our research relies on team members with highly interdisciplinary interests and strong extramural collaborations with physicians, chemists, biologists, physicists, and biophysicists from all over the world. My research has been supported by national and international grants for basic (GACR, DFG) and applied (BMBF, AiF, EU H2020) research amounting to over 4.5 million euros. I have published over 81 papers (54 as the corresponding author), one book, and have more than 3186 citations resulting in an h-index of 36 (GoS). My work has been recognized as Emerging Investigator in *Polymer Chemistry* (RSC, 2015), by the GDCh – German Chemical Society (GDCh workshop and Trendbericht Macromolekulare Chemie, Nachrichten aus der Chemie, 2020 and 2021), and by a number of invited talks at international conferences. I have also dedicated part of my scientific career to education, being in charge of a compulsory course in the Master program of RWTH Aachen University (over 150 students) and supervised 10 bachelor, 9 master, and currently mentor 12 Ph.D. thesis and 1 postdoc.

After receiving training in Uruguay, Prague (Czechia), Karlsruhe (Germany), Cambridge (U.K.), Philadelphia (USA), Lille (France), I established my first group at the Institute of Macromolecular Chemistry (Prague) supported by the highly competitive GACR Junior Grant where I focused on the basic research (synthesis and physicochemical properties) of antifouling layers. Striving to expand and translate my research, I decided to transplant my group to DWI-Leibniz-Institute for Interactive Materials (Aachen) in 2016. There, I have benefited from the highly interdisciplinary research hub and the extensive network of industrial partners that not only allowed me to expand my work towards Adaptive Biointerfaces and Synthetic Cells but also to initiate strong collaborations with renowned companies from the biomedical field, secure intellectual property, and explore my innovator and entrepreneur facets. In February 2022, I have been awarded an ICREA Research Professorship at the Institute of Bioengineering of Catalonia, where I lead the group "Bioinspired Interactive Materials and Protocellular Systems".

Education and Training

2015	Invited Visiting Scholar at Prof. Percec's group | **University of Pennsylvania**, Philadelphia, U.S.A
2014	Visiting Scholar at Prof. Lafont's group, COST Action | **CNRS**, Lille, France
2012 – 2013	Alexander von Humboldt Postdoctoral Research Fellow | **Karlsruhe Institute of Technology**, Karlsruhe, Germany Mentors: Prof. Barner-Kowollik and Prof. Bastmeyer
2007 – 2012	Ph.D. in Biophysics, Chemical and Macromolecular Physics | **Institute of Macromolecular Chemistry**, the Czech Academy of Sciences, v.v.i. and **Charles University in Prague**, Czechia Thesis title: "Sensitive Layers for Optical Biosensors and Protein Chips" Mentors: RNDr. Eduard Brynda and Prof. Dr. Aldo Bologna Alles
2012	Visiting Ph.D. Student at Prof. Percec's group | **University of Pennsylvania**, Philadelphia, U.S.A
2010 – 2011	Visiting Ph.D. Student at Prof. Barner-Kowollik's group | **Karlsruhe Institute of Technology**, Karlsruhe, Germany
2009, 2008	Visiting Invited Ph.D. Student at Prof. Wilhelm T.S. Huck's group | **Melville Laboratory, Cambridge University**, Cambridge, United Kingdom
2006 – 2007	UNESCO-IUPAC course in Polymer Science | **Institute of Macromolecular Chemistry**, the Czech Academy of Sciences, Prague, Czechia
2006	Chemical Engineer | **College of Engineering, Universidad de la República**, Montevideo, Uruguay

Professional Experience

From March 2022	ICREA Research Professor (Full Professor) | **Institute of Bioengineering of Catalonia,** Barcelona, Spain
Since 2016	Independent Group Leader, Adaptive biointerfaces and active synthetic cells | **DWI – Leibniz – Institute for Interactive Materials**, RWTH Aachen, Aachen, Germany

2015	Deputy Director, Department of Chemistry and Physics of Surfaces and Biointerfaces | **Institute of Macromolecular Chemistry**, the Czech Academy of Sciences, Prague, Czechia
2014 – 2015	Head of PolyLab Group | **Institute of Macromolecular Chemistry**, the Czech Academy of Sciences, Prague, Czechia
2014 – 2015	Junior Group Leader | **Institute of Macromolecular Chemistry**, the Czech Academy of Sciences, Prague, Czechia
2006 – 2009	Associate Research Assistant | **Department of Material Engineering, College of Engineering, Universidad de la República**, Montevideo, Uruguay
2004 – 2006	Laboratory Assistant | **Department of Material Engineering, College of Engineering, Universidad de la República**, Montevideo, Uruguay

Awards

2022	Macromolecular Rapid Communications Junior Researcher Award | **Freiburg Colloquium, Germany.**
2022	Institució Catalana de Recerca i Estudis Avançats (ICREA) Senior 2021 award (Porfessorship) | **ICREA**, Barcelona, Spain
2021	Innovation Sprint, 90 000€ for validation of start-up idea | **RWTH Aachen**, Aachen, Germany
2015	Polymer Chemistry Emerging Investigators 2015 | **Royal Society of Chemistry**, United Kingdom
2014	Japan Society for the Promotion of Science, Postdoctoral Fellowship for North American and European Researches (ID Nº. PE14051) | **5-3-1, Kojimachi, Chiyoda-ku, Tokyo 102-0083**, Japan (declined)
2013	Invitation for the Lindau Nobel Laureate Meeting | **Lindau**, Germany
2012 – 2013	Alexander von Humboldt Postdoctoral Research Fellow | **Karlsruhe Institute of Technology**, Karlsruhe, Germany
2007	UNESCO-IUPAC award in Polymer Science | **Institute of Macromolecular Chemistry**, the Czech Academy of Sciences, Prague, Czechia
2001	Fausto Community Service Award, Association of Journalists | **Uruguay**
2001	Bronze Medal, 33rd International Chemistry Olympiad | **Mumbai**, India
2000	Silver Medal, 4th National Chemistry Olympiad | **Uruguay**
2000	Bronze Medal, 6th Iberoamerican Chemistry Olympiad | Caracas, Venezuela
2000	Gold Medal, 4th Regional Chemistry Olympiad | **Uruguay**
1999	Silver Medal, 3rd National Chemistry Olympiad | **Uruguay**

Projects as Principal Investigator

ERS (RWTH) 2021 - 2022	Deformation-driven motility in synthetic cells by active particles | 59 000 €
BMBF (PI) 2022 - 2025	Hear2.0 Active interface system for artificial hearts with in vitro/in vivo validation (031B1154BX) in "Bio4MatPro" | 196 600 €
BMBF (PI) 2022 - 2025	AntiBacCat Bioinspired antimicrobial coatings for venous catheters. (031B1153AX) in "Bio4MatPro" | 280 550 €
BMBF (PI) 2021 – 2022	PepBrush4Heal "Ideenwettbewerb Biologisierung der Technik" | 90 415 €
BMBF (PI) 2021 – 2022	BioHyB "Ideenwettbewerb Biologisierung der Technik" | 86 679 €
RWTH Aachen (PI) 2021 – 2022	Innovation Sprint | 90 000 €
DFG-SPP (PI) 2021 - 2024	Non-thrombogenic adaptive coatings to modulate coagulation at oxygenator membranes (346972946) | 253 560 €
DFG-SFB 985 (PI) 2020 - 2024	Collaborative Research Centre: Functional Microgels and Microgel Systems (191948804) | Total 11 078 000 € (Rodriguez-Emmenegger part 226 800 €)
EU H2020 (PI) 2019 - 2022	EVPRO - Development of Extracellular Vesicles loaded hydrogel coatings with immunomodulatory activity for Promoted Regenerative Osseointegration of revision endoprosthesis (H2020-NMBPTR-IND-2018) | Total 5 799 089 € (Rodriguez-Emmenegger part 526 080 €)
BMBF (Co-PI) 2019 - 2021	PolyAntiBak - Research into Spatially Separated "On Demand" Multifunctional Polymer Compartments for Applications in the Field of Antibacterial and Healing- Promoting Implant Coatings (13XP5073B) | DWI part 352 675 €
Contract with Sarsted (PI) 2019 - 2020	Tubes 2.0 (coatings for blood collection tubes) | 130 000 €
BMBF (PI) 2019 - 2021	FeedPlatePlus –" Development of an Enzyme High Throughput Screening Platform" | Total 803 000 € (Rodriguez-Emmenegger part 218 000 €)
AiF (PI) 2019 - 2020	Antiadhesive Wound Dressings | 250 000 €
DFG-SPP (PI) 2017 - 2021	Self-regulated individualized thromboprotection of artificial lung assists (347367912) | 70 000 €
DFG-SPP (PI) 2016 - 2020	Non-thrombogenic active surface modification of oxygenator membrane for extended event-free use (346972946) | 174 000 €
GACR (PI) 2015 - 2018	Unraveling the Physicochemical Phenomena Leading to Antifouling Bioactive Surfaces (15-09368Y) Grant for establishment of a junior group | 7 000 000 CZK (≈270 000 €)
GACR (Co-PI) 2015 - 2018	Controlled macromolecular design by reversible-deactivation radical polymerization and modular ligations (15-14151S) | 5 992 530 CZK (≈230 000 €)

PPP program AVČR and DAAD (PI) 2014 - 2017	Mobility grant between Institute of Macromolecular Chemistry (Czechia) and Karlsruhe Institute of Technology (Germany): Complex Macromolecular Architectures for the Design of Biosensor Platforms | 198 000 CZK (≈7 700 €)
European Regional Development Funds OPP-K (Co-PI) 2014 - 2015	Innovation Center of Polymeric Sensors (CZ.2.16/3.1.00/21545) | 30 419 350,60 CZK (≈1 177 700 €)
MSMT/LH (Co-PI) 2013 - 2015	Mobility grant: Polymery ultra-rezistentní proti adsorpci proteinu pro biomedicínské aplikace syntetizované zivou radikálovou polymerizací (LH13178) | 1 666 000 CZK (≈64 700 €)

Innovation and Translation

I strive to translate my research to improve the performance of biomaterials and medical devices. For this, I built an extensive network of collaborators from clinics and strong collaborations with renowned companies from the biomedical field, such as Stryker, Aeskulap(Braun), LONZA, Meotec, Lohmann and Rausch, Kuhner Shaker, Vygon, CSL Behring, Octapharma, Sarsted AG, etc. I have secured IP on my research on antifouling hemocompatible surfaces and currently I am in the process of patenting our new antiviral technology together with Prof. Andreas Herrmann.

Patents

1. Rodriguez-Emmenegger, C.; Surman, F.; Brynda, E.; Riedel, T.; Houska, M.; Lisalova, H.; Homola, J., (**2020**): Copolymer of *N*-(2-Hydroxypropyl) Methacrylamide and Carboxybetaine Methacrylamide, Polymer Brushes. \| United States of America Patent # 10,626,209.
2. Rodriguez-Emmenegger, C.; Surman, F.; Brynda, E.; Riedel, T.; Houska, M.; Lisalova, H.; Homola, J., (**2020**): Copolymer of *N*-(2-Hydroxypropyl) Methacrylamide and Carboxybetaine Methacrylamide, Polymer Brushes. \| European Patent # EP 3292161.
3. Wilson, C. J., Buzzacchera, I., Vorobii, M., Rodriguez-Emmenegger, C. (**2018**): Coating for implantable medical device. \| International Patent WO2018/185313 A1.
4. Rodriguez-Emmenegger, C.; Surman, F.; Brynda, E.; Houska, M.; Lisalova, H.; Homola, J., (**2016**): Polymeric brushes resistant to deposition of biological media components, process for their preparation and their use. \| Czech Patent # 306039.

Mentoring

Current team at DWI – Leibniz – Institute for Interactive Materials

Postdocs	Nina Kostina (2019 - to date)
Ph.D. students	Mariia Vorobii (2016 – 2021, Thesis in preparation), Fabian Obstals (2017 - 2020, Thesis in preparation), Dominik Söder (2019 - to date), Manuela Garay Sarmiento (2019 - to date), Lena Witzdam (2020 - to date), Anna M. Wagner (2020 - to date), Anton Joseph (2020 - to date), Jonas Quandt (2020 - to date), Jenny Englert (2022)
Co-supervised Ph.D. students	Robin Höhner (2017 - 2020, Thesis in preparation), Mehrnoush Rahimzadeh (2018 - to date), Jan Tenbusch (2019 - to date), Laura Rohmann (2019 - to date)

Master students	Yannik Rutsch (2021)

Alumni

Ph.D. students	Andrés de los Santos Pereira | Institute of Macromolecular Chemistry, Prague, Czechia, 2012 – 2018
Master students	Fabian Obstals (2016), Cornelia Stöcker (2016), Dominik Söder (2018), Lena Witzdam (2019), Anton Joseph (2019), Anna Wagner (2019), Jonas Quandt (2020), Yannick Meurer (2020) Jenny Englert (2021), David Schroeter (2021), | DWI – Leibniz – Institute for Interactive Materials, RWTH Aachen, Aachen, Germany
Bachelor students	Jan Haß (2016), Friedrich Meder (2016), Jenny Englert (2018), Lennart Janke (2018), Steven Zimmer (2018), Nicolas Schmitz (2018), Johannes von Campenhausen (2018), Anna Theresa Reineke (2019), Angelina Schreiber (2019), Yannik Rutsch (2019) | DWI – Leibniz – Institute for Interactive Materials, RWTH Aachen, Aachen, Germany
UNESCO — IUPAC postgraduate students	Oksana Avramenko (2009-2010), Andrés de los Santos Pereira (2011—2012), Andrii Kuzmyn (2012—2013), Mariia Vorobii (2013—2014), Betina Lopez-Mila (2015—2016), Viviana Parrillo (2015—2016) | Institute of Macromolecular Chemistry, Prague, Czechia, 10 months research stay
DAAD — GACR exchange program	Alexander Quick (2014), Doris Abt (2014), Markus Zieger (2014), Jan Steinkönig (2014), | Institute of Macromolecular Chemistry, Prague, Czechia, joint mobility DAAD grant with Prof. Barner-Kowollik for exchange of student between groups
Visiting students	Airidas Korolkovas (2014), Bade Kavurt (2015), Joachim Laun (2015) | Institute of Macromolecular Chemistry, Prague, Czechia
	Irene Buzzacchera (2016), Daria Kotlarek (2017), Mina Heidari (2016), Yurii Churilov (2018), Pilar Bologna (2019), Edurne Marin (2021) | DWI – Leibniz - Institute, Aachen, Germany

Teaching Experience

2018 – to date	Soft Matter Nanoscience (winter semester, ≈ 150 students course) | Master Study Program, RWTH Aachen University, Aachen, Germany
2015 – 2018	Polymer Chemistry (tele-lectures) | Universidad de la República, Montevideo, Uruguay
2007 – 2015	Surface Plasmon Resonance Biosensors (practical course, 2 lectures) | Institute of Macromolecular Chemistry, the Czech Academy of Sciences, Prague, Czechia
2003	Tutor of Physics — Mechanics (practical course) | College of Chemistry, Universidad de la República, Montevideo, Uruguay

Scientific Output

I have published 81 publications in total, where I am the corresponding author of 54. According to Google Scholar, I have 3186 citations and my h-index is 36.

Publications

1. Garay-Sarmiento, M.; Witzdam, L.; Vorobii, M.; Simons, C.; Herrmann, N.; de los Santos Pereira, A.; Heine, E.; El-Awaad, I.; Lütticken, R.; Jakob, F.; Schwaneberg, U.; Rodriguez-Emmenegger, C.* (**2021**): *Kill&Repel Coatings: the marriage of antifouling and bactericidal properties to mitigate and treat wound infections*. | **Advanced Functional Materials**, DOI: 10.1002/adfm.202106656 (**Highlighted in front cover**).

2. Riedel, T.;* de los Santos Pereira, A.; Táborská, J.; Riedelová, Z.; Pop-Georgievski, O.; Májek, P.; Pečánková, K.; Rodriguez-Emmenegger, C. (**2021**): *Complement activation dramatically accelerates blood plasma fouling on antifouling poly(2-Hydroxyethyl Methacrylate) brush surfaces*. | **Macromolecular Bioscience**, DOI: 10.1002/mabi.202100460.

3. Söder, D.; Garay-Sarmiento, M.; Rahimi, K.; Obstals, F.; Dedisch, S.; Haraszti, T.; Davari, M. D.; Jakob, F.; Heß, C.; Schwaneberg, U.; Rodriguez-Emmenegger, C.* (**2021**): *Unraveling the mechanism and kinetics of bnding of an LCI-eGFP-polymer for antifouling coatings*. | **Macromolecular Bioscience**, DOI: 10.1002/mabi.202100158.

4. Vorobii, M.; Teixeira-Santos, R.; Gomes, L. C.; Garay-Sarmiento, M.; Wagner, A. M.; Mergulhão, F. J.; Rodriguez-Emmenegger, C.* (**2021**): *Oriented immobilization of Pep19-2.5 on antifouling brushes suppresses the development of Staphylococcus aureus biofilms*. | **Progress in Organic Coatings**, DOI: 10.1016/j.porgcoat.2021.106609.

5. Obstals, F.; Witzdam, L.; Garay-Sarmiento, M.; Kostina, N. Yu.; Quandt, J.; Rossaint, R.; Singh, S.; Grottke, O.; Rodriguez-Emmenegger, C.* (**2021**): *Improving hemocompatibility: How can smart surfaces direct blood to fight against thrombi*. | **ACS Applied Materials & Interfaces**, DOI: 10.1021/acsami.1c01079.

6. Kostina, N. Yu.; Söder, D.; Haraszti, T.; Xiao, Q.; Rahimi, K.; Patridge, B. E.; Klein, M. L.; Percec, V.*; Rodriguez-Emmenegger, C.* (**2021**): *Enhanced concanavalin A binding to preorganized mannose nanoarrays in glycodendrimersomes revealed multivalent interactions.* | **Angewandte Chemie**, DOI:10.1002/anie.202100400

7. Kostina, N. Yu.; Wagner, A. M.; Haraszti, T.; Rahimi, K.; Xiao, Q.; Klein, M. L.; Percec, V.; Rodriguez-Emmenegger, C.* (**2021**): *Unraveling topology-induced shape transformations in dendrimersomes*. | **Soft Matter**, 17, 254-267 (**Invited paper in themed collection: Remodelling of Biomembranes, Highlighted in front cover**)

8. Striebel, J.; Vorobii, M.; Kumar, R.; Liu, H.-Y.; Yang, B.; Weishaupt, C.; Rodriguez-Emmenegger, C.*; Fuchs, H.; Hirtz, M.*; Riehemann, K.* (**2021**): *Controlled surface adhesion of macrophages via patterned antifouling polymer brushes.* | **Advanced NanoBiomed Research**, 2021, doi: 10.1002/anbr.202000029

9. Lomora, M.; Larrañaga, A.; Rodriguez-Emmenegger, C.; Rodriguez, B.; Dinu, I. A.; Sarasua, J. R.; Pandit, A.* (**2021**): *Robocoliths : an engineered coccolith-based hybrid that transforms light into swarming motion*. | **Cell Reports Physical Science**, doi: 10.1016/j.xcrp.2021.100373

10. Li, S.; Javed, B.; Hasley, W. D.; Melendez-Davila, A.; Liu, M.; Kerzner, M.; Agarwal, S.; Xiao, Q.; Rahimi, K.; Kostina, N. Y.; Möller, M.; Rodriguez-Emmenegger, C.; Torre, P.; Bermudez, J.; Good, M. C.; Klein, M. L.; Percec, V.* (**2020**): *Direct visualization of vesicle disassembly and reassembly using photocleavable dendrimers elucidates cargo release mechanisms.* | **ACS Nano**, 14, 7398-7411

11. Xiao, Q.; Delbianco, M.; Sherman, S. E.; Reveron Perez, A. M.; Bharate, P.; Pardo-Vargas, A.; Rodriguez-Emmenegger, C.; Kostina, N. Y.; Rahimi, K.; Soeder, D.; Möller, M.; Klein, M. L.; Seeberger, P. H.*; Percec, V. * (**2020**): *Nano-vesicles displaying functional linear and branched oligomannose self-assembled from sequence-defined Janus glycodendrimers.* | **Proceedings of the National Academy of Sciences**, 117(22), 11931-11939

12. Kotlarek, D.; Curti, F.; Vorobii, M.; Corradini, R.; Careri, M.; Knoll, W.; Rodriguez-Emmenegger, C.*; Dostalek, J.* (**2020**): *Surface plasmon resonance-based aptasensor for direct monitoring of thrombin in a minimally processed human blood.* | **Sensors and Actuators B**, 320, 128380

13. Alves, P.; Gomes, L.C.; Rodriguez-Emmenegger, C.*; Mergulhao, F.J.* (**2020**): *Efficacy of A poly (MeOEGMA) brush on the prevention of Escherichia coli biofilm formation and susceptibility.* | **Antibiotics,** 9(5), 216

14. Alves, P.; Gomes, L.C.; Vorobii, M.; Rodriguez-Emmenegger, C.*; Mergulhao, F.J.* (**2020**): *The potential advantages of using a poly(HPMA) brush in urinary catheters: effects on biofilm cells and architecture.* | **Colloids and Surfaces B: Biointerfaces,** 191, 110976

15. Dedisch, S.; Wiens, A.; Davari, M. D.; Söder, D.; Rodriguez-Emmenegger, C.; Jakob, F.; Schwaneberg, U. (**2020**): *Matter-tag: A universal immobilization platform for enzymes on polymers, metals, and silicon-based materials.* | **Biotechnology and bioengineering,** 117, 49-61

16. Bensabeh, N.; Moreno, A.; Roig, A.; Rahimzadeh, M.; Rahimi, K.; Ronda, J. C.; Cádiz, V.; Galià, M.; Percec, V.*; Rodriguez-Emmenegger, C.*; Lligadas, G.* (**2019**): *Photoinduced upgrading of lactic acid-based solvents to block copolymer surfactants*. | **ACS Sustainable Chemistry & Engineering**, 8 (2), 1276-1284

17. Kotlarek, D.; Vorobii, M.; Ogieglo, W.; Knoll, W.; Rodriguez-Emmenegger, C.; Dostalek, J.* (**2019**): *Compact grating-coupled biosensor for the analysis of thrombin.* | **ACS Sensors**, 4 (8), 2109-2116

18. Kostina, N. Yu.; Rahimi, K.; Xiao, Q.; Haraszti, T.; Dedisch, S.; Spatz, J.; Schwaneberg, U.; Klein, M. L.; Percec, V.; Möller, M.; Rodriguez-Emmenegger, C.* (**2019**): *Membrane-mimetic dendrimersomes engulf living bacteria via endocytosis.* | **Nano Letters**, 19 (8), 5732-5738

19. Dedisch, S.; Obstals, F.; de los Santos Pereira, A.; Bruns, M.; Jakob, F.; Schwaneberg, U.*; Rodriguez-Emmenegger, C.* (**2019**): *Turning a killing mechanism into an adhesion and antifouling advantage.* | **Advanced Materials Interfaces**, 2019 (6), 1900847

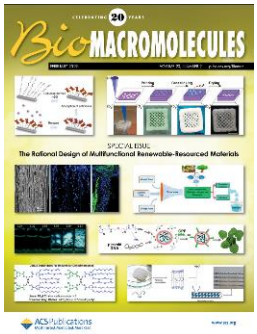
20. Torre, P.; Xiao, Q.; Buzzacchera, I.; Sherman, S. E.; Rahimi, K.; Kostina, N. Yu.; Rodriguez-Emmenegger, C.; Möller, M.; Wilson, C. J.; Klein, M. L.; Good, M. C.; Percec, V.* (**2019**): *Encapsulation of hydrophobic components in dendrimersomes and decoration of their surface with proteins and nucleic acids.* | **Proceedings of the National Academy of Sciences**, 116 (31), 15378-15385

21. Rodriguez-Emmenegger, C.; Xiao, Q.; Kostina, N. Y.; Sherman, S. E.; Rahimi, K.; Partridge, B. E.; Li, S.; Sahoo, D.; Reveron Perez, A. M.; Buzzacchera, I.; Han, H.; Kerzner, M.; Malhotra, I.; Möller, M.; Wilson, C. J.; Good, M. C.; Goulian, M.; Baumgart, T.; Klein, M. L.; Percec, V.* (**2019**): *Encoding biological recognition in a bicomponent cell-membrane mimic*. | Proceedings of the National Academy of Sciences, 116 (8), 5376-5382

22. Ludwig, A.-K.; Michalak, M.; Xiao, Q.; Gilles, U.; Medrano, F. J.; Ma, H.; FitzGerald, F. G.; Hasley, W. D.; Melendez-Davila, A.; Liu, M.; Rahimi, K.; Kostina, N. Y.; Rodriguez-Emmenegger, C.; Möller, M.; Lindner, I.; Kaltner, H.; Cudic, M.; Reusch, D.; Kopitz, J.; Romero, A.; Oscarson, S.; Klein, M. L.; Gabius, H.-J.; Percec, V.* (**2019**): *Design–functionality relationships for adhesion/growth-regulatory galectins*. | Proceedings of the National Academy of Sciences, 116 (8), 3837-2842

23. Vorobii, M.; Kostina, N. Y.; Rahimi, K.; Grama, S.; Soeder, D.; Pop-Georgievski, O.; Sturcova, A.; Horak, D.; Grottke, O.; Singh, S.; Rodriguez-Emmenegger, C.* (**2019**): *Antifouling microparticles to scavenge lipopolysaccharide from human blood plasma.* | Biomacromolecules, 20 (02), 959-968

24. Kostina, N. Y.; Blanquer, S.; Pop-Georgievski, O.; Rahimi, K.; Dittrich, B.; Hocherl, A.; Michalek, J.; Grijpma, D. W.; Rodriguez-Emmenegger, C.* (**2019**): *Zwitterionic functionalizable scaffolds with gyroid pore architecture for tissue engineering*. | Macromolecular Bioscience, e1800403



25. Buzzacchera, I.; Xiao, Q.; Han, H.; Rahimi, K.; Li, S.; Kostina, N. Y.; Toebes, B. J.; Wilner, S. E.; Moller, M.; Rodriguez-Emmenegger, C.; Baumgart, T.; Wilson, D. A.; Wilson, C. J.; Klein, M. L.; Percec, V.* (**2018**): *Screening libraries of amphiphilic Janus dendrimers based on natural phenolic acids to discover monodisperse unilamellar dendrimersomes*. | Biomacromolecules, 20 (2), 712-727 (Highlighted in front cover)

26. Lopez-Mila, B.; Alves, P.; Riedel, T.; Dittrich, B.; Mergulhao, F.; Rodriguez-Emmenegger, C.* (**2018**): *Effect of shear stress on the reduction of bacterial adhesion to antifouling polymers.* | Bioinspiration and Biomimetics, 13 (6), 065001- 065012

27. Obstals, F.; Vorobii, M.; Riedel, T.; de los Santos Pereira, A.; Bruns, M.; Singh, S.; Rodriguez-Emmenegger, C.* (**2018**): *Improving hemocompatibility of membranes for extracorporeal membrane oxygenators by grafting non-thrombogenic polymer brushes.* | Macromolecular Bioscience, 18 (3) 1700359

28. Buzzacchera, I.; Vorobii, M.; Kostina, N. Y.; de Los Santos Pereira, A.; Riedel, T.; Bruns, M.; Ogieglo, W.; Moller, M.; Wilson, C. J.; Rodriguez-Emmenegger, C.* (**2017**): *Polymer brush-functionalized chitosan hydrogels as antifouling implant coatings.* | Biomacromolecules, 18 (6), 1983-1992

29. Parrillo, V.; de Los Santos Pereira, A.; Riedel, T.; Rodriguez-Emmenegger, C.* (**2017**): *Catalyst-free "click" functionalization of polymer brushes preserves antifouling properties enabling detection in blood plasma*. | Analytica Chimica Acta, 971, 78-87

30. Bog, U.; de Los Santos Pereira, A.; Mueller, S. L.; Havenridge, S.; Parrillo, V.; Bruns, M.; Holmes, A. E.; Rodriguez-Emmenegger, C.*; Fuchs, H.*; Hirtz, M.* (**2017**): *Clickable antifouling polymer brushes for polymer pen lithography*. | ACS Applied Materials & Interfaces, 9 (13), 12109-12117

31. Korolkovas, A.; Rodriguez-Emmenegger, C.; de los Santos Pereira, A.; Chennevière, A.; Restagno, F.; Wolff, M.; Adlmann, F. A.; Dennison, A. J. C.; Gutfreund, P.* (**2017**): *Polymer brush collapse under shear flow*. | **Macromolecules**, 50 (3), 1215

32. Zieger, M. M.; Pop-Georgievski, O.; de Los Santos Pereira, A.; Verveniotis, E.; Preuss, C. M.; Zorn, M.; Reck, B.; Goldmann, A. S.; Rodriguez-Emmenegger, C.*; Barner-Kowollik, C.* (**2017**): *Ultrathin monomolecular films and robust assemblies based on cyclic catechols*. | **Langmuir**, 33 (3), 670

33. Riedel, T.; Hageneder, S.; Surman, F.; Pop-Georgievski, O.; Noehammer, C.; Hofner, M.; Brynda, E.; Rodriguez-Emmenegger, C.*; Dostalek, J.* (**2017**): *Plasmonic Hepatitis B biosensor for the analysis of clinical saliva*. | **Analytical Chemistry**, 89 (5), 2972

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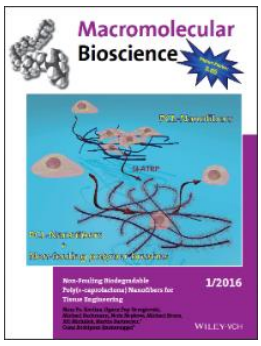

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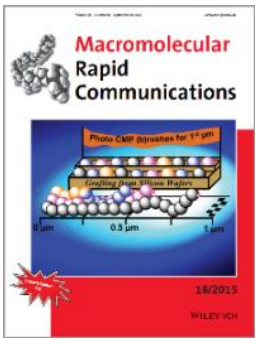

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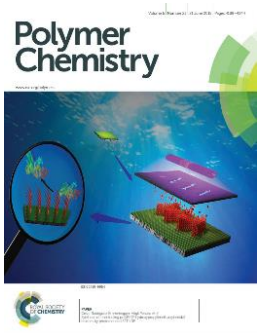

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Books

1. Thompson, M.; Blaszykowski, C.; Sheikh, S.; Rodriguez-Emmenegger, C.; de los Santos Pereira, A. *Biological Fluid-Surface Interactions in Detection Devices*. | (RSC Detection Science): **The Royal Society of Chemistry**, Cambridge, UK. ISBN: 978-1-78262-097-6. DOI: 10.1039/9781782622048.

Selected Invited Talks

- Bio-inspired soft matter at the service of interactive biointerfaces and synthetic cells | **Invited Lecture IBEC**. October 22nd, 2021
- Superselectivity in synthetic protocells| **Lecture for SynCell2021, Speaker Series**. April 12th, 2021
- New concept for protocells and their interaction with living matter | **Lecture for Biological Soft Matter Seminar**. January 19th, 2021
- Synthetic cell membrane mimics interacting with living matter | **Lecture for Theoretical Physics of Living Matter Seminar organized by Jülich Research Center**. December 10th, 2020
- Design of superselectivity in synthetic cell membranes | **Online lecture for the Department of Physical Chemistry and Soft Matter at Wageningen University & Research**. November 12th, 2020
- Superselectivity in synthetic protocells | **I-PCG Webinar**. May 14th, 2020
- Controlling cell adhesion with antifouling polymer brushes | **KNMF Meeting**, Karlsruhe, Germany. March 11th, 2020
- Superselectivity at Biointerfaces: From molecular design to adaptive protocells | **Ringberg Symposium, "Matter to Life", Max Planck Society**. Tegernsee, Germany. December 16th, 2019
- Towards superselectivity at artificial cell membrane mimics | **Biomembrane days 2019**. Berlin, Germany. December 12th, 2019
- Synthetic cells eat bacteria: towards a new paradigm for antimicrobials | **Interactive HCV/HIV workshop Euregio 2019**. November 15th, 2019
- Cell-membrane mimics beyond liposomes | **Invited talk at the Max Planck Institute of Biochemistry**. November 5th, 2019

- Superselectivity at Biointerfaces: From molecular design to adaptive protocells | **Habilitant Workshop of the German Chemical Society**. Marl, Germany. September 23rd, 2019
- Superselectivity at Biointerfaces | **Biocev Meeting**. Prague, Czechia. June 17th, 2019
- Turning a killing mechanism into an adhesion and antifouling advantage | **Aachen Protein Engineering Symposium.** Aachen, Germany. October 8th-10th, 2018
- Towards Synthetic Macrophages | **Karman Conference – Materials for Life.** Bergisch-Gladbach, Germany. April 2018
- Tailor-made Antifouling Biointerfaces Based on Antifouling Polymer Brushes | **6th iPROMEDAI S&T Meeting**. Malta. April 18th-21st, 2017
- Antifouling Biointerfaces | **V STINT Workshop –Understanding the Biocompatibility of Polymeric Surfaces.** STINT The Swedish Foundation for International Cooperation in Research and Higher. Olinda, Brazil. December 3rd – 5th, 2015
- Polymer brushes as a tool for tailoring the properties of biointerfaces | **Vltava Meetings**. Prague, Czech Republic. December 2014
- Merging advanced ligation protocols with controlled polymerization for the design of antifouling biointerfaces | **Symposium on Chemical and Biotechnology Engineering**. Nanyang Technological University. Singapore. November 13th – 14th, 2014
- Tutoring Lecture: Modular design of bioactive antifouling interfaces | **Symposium on Chemical and Biotechnology Engineering**. Nanyang Technological University. Singapore. November 15th, 2014
- Development of Biointerfaces resistant to protein fouling | **8 Journees Scientifiques la Recherche a l'Université**. Biofouling and Antifouling III. Toulon, France. April 15th-16th, 2014

Barcelona, 15.03.2022

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