

Rafael Muñoz-Espí

Publication List

(September 5, 2024)

Peer-Reviewed Articles

2024

1. O. Álvarez-Bermúdez, K. Landfester, K. A. I. Zhang, **R. Muñoz-Espí***. Proline-Functionalized Magnetic Nanoparticles as Highly Performing Asymmetric Catalysts. *Macromol. Rapid Commun.* **2024**, in press [DOI: [10.1002/marc.202400615](https://doi.org/10.1002/marc.202400615)]
2. S. Wang, M. Neufurth, H. Schepler, **R. Muñoz-Espí**, H. Ushijima, H. C. Schröder, X. Wang*, W. E. G. Müller*. Liquid-liquid phase transition as basis for novel materials for skin repair and regeneration. *J. Mater. Chem. B* **2024**, accepted manuscript [DOI: [10.1039/D4TB01080A](https://doi.org/10.1039/D4TB01080A)]
3. N. Jabeen, M. Muddasar, N. Menéndez, M. A. Nasiri, C. M. Gómez, M. N. Collins, **R. Muñoz-Espí**, A. Cantarero, M. Culebras*. Recent advances in ionic thermoelectric systems and theoretical modelling. *Chem. Sci.* **2024**, accepted manuscript [DOI: [10.1039/D4SC04158E](https://doi.org/10.1039/D4SC04158E)]
4. A. M. Elzayat*, K. Landfester, **R. Muñoz-Espí***. Chitosan/Silica Hybrid Nanogels by Inverse Nanoemulsion for Encapsulating Hydrophilic Substances. *Macromol. Mater. Eng.* **2024**, 2400151 (8 pp.) [DOI: [10.1002/mame.202400151](https://doi.org/10.1002/mame.202400151)]
5. I. Adam-Cervera, J. Huerta-Recasens, Clara M. Gómez, M. Culebras*, **R. Muñoz-Espí***. Nanoencapsulation of Organic Phase Change Materials in Poly(3,4-Ethylenedioxythiophene) for Energy Storage and Conversion. *Polymers* **2024**, *16*, 100 (12 pp.) [DOI: [10.3390/polym16010100](https://doi.org/10.3390/polym16010100)]

2023

6. A. M. Elzayat, I. Adam-Cervera, M. Albus, A. Cháfer, J. D. Badia, F. F. Pérez-Pla, **R. Muñoz-Espí***. Polysaccharide/Silica Microcapsules Prepared via Ionic Gelation Combined with Spray Drying: Application in the Release of Hydrophilic Substances and Catalysis. *Polymers* **2023**, *15*, 4116 (14 pp.) [DOI: [10.3390/polym15204116](https://doi.org/10.3390/polym15204116)]
7. F. Tajoli, M. V. Massagrande, **R. Muñoz-Espí**, S. Gross*. Exploring the role of miniemulsion nanodroplet confinement on the crystallization of MoO₃: morphology control and insight on crystal formation by in situ time-resolved SAXS/WAXS. *Nanomaterials* **2023**, *13*, 1046 (20 pp.) [DOI: [10.3390/nano13061046](https://doi.org/10.3390/nano13061046)]
8. J. F. Serrano-Claumarchirant, **R. Muñoz-Espí**, A. Cantarero, M. Culebras, C. M. Gómez*. Electrochemical Deposition of Conductive Polymers on Fabrics. *Coatings* **2023**, *13*, 383 (17 pp.) [DOI: [10.3390/coatings13020383](https://doi.org/10.3390/coatings13020383)]

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9. W. E. G. Müller*, M. Neufurth, H. Ushijima, **R. Muñoz-Espí**, L.-K. Müller, S. Wang, H. C. Schröder, X. Wang*. Molecular and biochemical approach for understanding the transition of amorphous to crystalline calcium phosphate deposits in human teeth. *Dent. Mater.* **2022**, *38*, 2014–2029 [DOI: [10.1016/j.dental.2022.11.013](https://doi.org/10.1016/j.dental.2022.11.013)]
10. N. K. Ray, H. Patel, **R. Muñoz-Espí**, K. Landfester, V. Gundabala*. Synthesis of silver-coated polystyrene latex through in situ metal reduction. *MRS Commun.* **2022**, *12*, 952–958 [DOI: [10.1557/s43579-022-00281-7](https://doi.org/10.1557/s43579-022-00281-7)]
11. A. M. Elzayat, F. F. Pérez-Pla, **R. Muñoz-Espí***. A Chitosan/Silica Hybrid 3D Scaffold for Simultaneous Entrapment of Two Different Hydrophilic Substances. *Mater. Lett.* **2022**, *326*, art. no. 132941 (5 pp.) [DOI: [10.1016/j.matlet.2022.132941](https://doi.org/10.1016/j.matlet.2022.132941)]
12. M. M. Metwally*, **R. Muñoz-Espí**, I. Youssef, D. S. Badawy, M. Abdelaal. Synthesis of 3-Dimensional Chitosan/Carboxymethyl Cellulose/ZnO Biopolymer Hybrids by Iontropic Gelation for Application in Drug Delivery. *Egypt. J. Chem.* **2022**, *65*, 299–307 [DOI: [10.21608/ejchem.2021.76761.3765](https://doi.org/10.21608/ejchem.2021.76761.3765)]

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13. W. E. G. Müller*, M. Neufurth, I. Lieberwirth, **R. Muñoz-Espí**, S. Wang, H. C. Schröder, X. Wang*. Triple-target stimuli-responsive anti-COVID-19 face mask with physiological virus-inactivating agents. *Biomater. Sci.* **2021**, *9*, 6052–6063 [DOI: [10.1039/D1BM00502B](https://doi.org/10.1039/D1BM00502B)]
14. A. Elzayat, I. Adam-Cervera, O. Álvarez-Bermúdez, **R. Muñoz-Espí***. Nanoemulsions for synthesis of biomedical nanocarriers. *Colloids Surf. B: Biointerfaces* **2021**, *203*, art. no. 111764 (11 pp.) [DOI: [10.1016/j.colsurfb.2021.111764](https://doi.org/10.1016/j.colsurfb.2021.111764)]
15. A. Elzayat, E. Tolba, F. F. Pérez-Pla, A. Oraby, **R. Muñoz-Espí***. Increased Stability of Polysaccharide/Silica Hybrid Submicellar Carriers for Retarded Release of Hydrophilic Substances. *Macromol. Chem. Phys.* **2021**, *222*, art. no. 2100027 (12 pp.) [DOI: [10.1002/macp.202100027](https://doi.org/10.1002/macp.202100027)]

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16. O. Álvarez-Bermúdez, I. Adam-Cervera, A. Aguado-Hernández, K. Landfester, **R. Muñoz-Espí***. Magnetic Polyurethane Microcarriers from Nanoparticle-Stabilized Emulsions for Thermal Energy Storage. *ACS Sustain. Chem. Eng.* **2020**, *8*, 17956–17966 [DOI: [10.1021/acssuschemeng.0c05525](https://doi.org/10.1021/acssuschemeng.0c05525)]
17. W. E. G. Müller*, M. Ackermann, B. Al-Nawas, L. A. R. Righesso, **R. Muñoz-Espí**, E. Tolba, M. Neufurth, H. C. Schröder, X. Wang. Amplified morphogenetic and bone forming activity of amorphous versus crystalline calcium phosphate/polyphosphate. *Acta Biomater.* **2020**, *118*, 233–247 [DOI: [10.1016/j.actbio.2020.10.023](https://doi.org/10.1016/j.actbio.2020.10.023)]
18. J. F. Serrano-Claumarchirant, I. Brotons-Alcázar, M. Culebras, M. J. Sanchis, A. Cantarero, **R. Muñoz-Espí***, C. M. Gómez*. Electrochemical Synthesis of an Organic Thermo-electric Power Generator. *ACS Appl. Mater. Interf.* **2020**, *12*, 46348–46356 [DOI: [10.1021/acsaami.0c12076](https://doi.org/10.1021/acsaami.0c12076)]

19. W. E.G. Müller*, H. Schepler, E. Tolba, S. Wang, M. Ackermann, **R. Muñoz-Espí**, S. Xiao, R. Tan, Z. She, M. Neufurth, H. C. Schröder, X. Wang*. A physiologically active interpenetrating collagen network that supports growth and migration of epidermal keratinocytes: Zinc-polyP nanoparticles integrated into compressed collagen. *J. Mater. Chem. B* **2020**, *8*, 5892–5902 [DOI: [10.1039/D0TB01240H](https://doi.org/10.1039/D0TB01240H)]
20. **R. Muñoz-Espí***, K. Landfester*. Low-Temperature Miniemulsion-Based Routes for Synthesis of Metal Oxides. *Chem.—Eur. J.* **2020**, *26*, 9304–9313 [DOI: [10.1002/chem.202001246](https://doi.org/10.1002/chem.202001246)]
21. E. Tolba, S. Wang, X. Wang*, M. Neufurth, M. Ackermann, **R. Muñoz-Espí**, B. M. Abd El-Hady, H. C. Schröder, W. E. G. Müller*. Self-Healing Properties of Bioinspired Amorphous CaCO₃/Polyphosphate-Supplemented Cement. *Molecules* **2020**, *25*, 2360 [DOI: [10.3390/molecules25102360](https://doi.org/10.3390/molecules25102360)]
22. O. Álvarez-Bermúdez, A. Torres-Suay, F. F. Pérez-Pla, K. Landfester, **R. Muñoz-Espí***. Magnetically Enhanced Polymer-Supported Ceria Nanocatalysts for the Hydration of Nitriles. *Nanotechnology* **2020**, *31*, 405604 (13 pp.) [DOI: [10.1088/1361-6528/ab8765](https://doi.org/10.1088/1361-6528/ab8765)]
23. J. F. Serrano-Claumarchirant, M. Culebras, A. Cantarero, C. M. Gómez, **R. Muñoz-Espí**, M. N. Collins*. PEDOT Thin Films with n-Type Thermopower. *ACS Appl. Energy Mater.* **2020**, *3*, 861–867 [DOI: [10.1021/acsaem.9b01985](https://doi.org/10.1021/acsaem.9b01985)]
24. J. F. Serrano-Claumarchirant, M. Culebras, A. Cantarero, C. M. Gómez*, **R. Muñoz-Espí***. Poly(3,4-Ethylenedioxythiophene) Nanoparticles as Building Blocks for Hybrid Thermoelectric Flexible Films. *Coatings* **2020**, *10*, 22 [DOI: [10.3390/coatings10010022](https://doi.org/10.3390/coatings10010022)]

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25. W. E. G. Müller*, E. Tolba, S. Wang, Q. Li, M. Neufurth, M. Ackermann, **R. Muñoz-Espí**, H. C. Schröder, X. Wang*. Transformation of construction cement to a self-healing hybrid binder. *Int. J. Molec. Sci.* **2019**, *20*, 2948 (22 pp.) [DOI: [10.3390/ijms20122948](https://doi.org/10.3390/ijms20122948)]
26. P. Dolcet*, K. Kirchberg, A. Antonello, C. Suchomski, R. Marschall, S. Diodati, **R. Muñoz-Espí**, K. Landfester, S. Gross*. Exploring wet chemistry approaches to ZnFe₂O₄ spinel ferrite nanoparticles with different inversion degrees: a comparative structural and spectroscopic study. *Inorg. Chem. Front.* **2019**, *6*, 1527–1534 , [DOI: [10.1039/C9QI00241C](https://doi.org/10.1039/C9QI00241C)]
27. H. Lu*, A. Schäfer, H. Lutz, S. J. Roeters, I. Lieberwirth, **R. Muñoz-Espí**, M. A. Hood, M. Bonn, T. Weidner*. Peptide-Controlled Assembly of Macroscopic Calcium Oxalate Nanosheets. *J. Phys. Chem. Letter* **2019**, *10*, 2170–2174, [DOI: [10.1021/acs.jpcllett.9b00684](https://doi.org/10.1021/acs.jpcllett.9b00684)]
28. K. Katta, D. Busko, Y. Avlasevich, K. Landfester, S. Balushev*, **R. Muñoz-Espí***. Ceria/Polymer Nanocontainers for High-Performance Encapsulation of Fluorophores. *Beilstein J. Nanotechnol.* **2019**, *10*, 522–530 [DOI: [10.3762/bjnano.10.53](https://doi.org/10.3762/bjnano.10.53)]
29. E. Tolba, X. Wang*, M. Ackermann, M. Neufurth, **R. Muñoz-Espí**, H. C. Schröder, W. E. G. Müller*. In-Situ Polyphosphate Nanoparticle Formation in Hybrid Poly(Vinyl Alcohol)/Karaya Gum Hydrogels: A Porous Scaffold inducing Infiltration of Mesenchymal Stem Cells. *Adv. Sci.* **2019**, *6*, 1801452 (15 pp.) [DOI: [10.1002/advs.201801452](https://doi.org/10.1002/advs.201801452)]

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30. K. Katta, D. Busko, K. Landfester, S. Balushev*, **R. Muñoz-Espí***. Inorganic Protection of Polymer Nanocapsules: A Strategy to Improve the Efficiency of Encapsulated Optically Active Molecules. *Israel J. Chem.* **2018**, *58*, 1356–1362 [DOI: [10.1002/ijch.201800111](https://doi.org/10.1002/ijch.201800111)]
31. M. Culebras, J. F. Serrano-Claumarchirant, M. J. Sanchis, K. Landfester, A. Cantarero, C. M. Gómez, **R. Muñoz-Espí***. Conducting PEDOT Nanoparticles: Controlling Colloidal Stability and Electrical Properties. *J. Phys. Chem. C* **2018**, *122*, 19197–19203 [DOI: [10.1021/acs.jpcc.8b04981](https://doi.org/10.1021/acs.jpcc.8b04981)]
32. A. Antonello, C. Benedetti, F. F. Pérez-Pla, M. Kokkinopoulou, K. Kirchhoff, V. Fischer, K. Landfester, S. Gross, and **R. Muñoz-Espí***. Colloidally Confined Crystallization of Highly Efficient Ammonium Phosphomolybdate Catalysts. *ACS Appl. Mater. Interf.* **2018**, *10*, 23174–23186 [DOI: [10.1021/acsami.8b01617](https://doi.org/10.1021/acsami.8b01617)]
33. W. E. G. Müller*, S. Wang, E. Tolba, M. Neufurth, M. Ackermann, **R. Muñoz-Espí**, I. Lieberwirth, G. Glasser, H. C. Schröder, X. Wang*. Transformation of Amorphous Polyphosphate Nanoparticles into Coacervate Complexes: An Approach for the Encapsulation of Mesenchymal Stem Cells. *Small* **2018**, 1801170 (12 pp.) [DOI: [10.1002/sml.201801170](https://doi.org/10.1002/sml.201801170)]
34. I. Singh, S. Dey, S. Santra, K. Landfester*, **R. Muñoz-Espí***, A. Chandra*. Cerium-doped Copper(II) Oxide Hollow Nanostructures as Efficient and Tunable Sensors for Volatile Organic Compounds. *ACS Omega* **2018**, *3*, 5029–5037 [DOI: [10.1021/acsomega.8b00203](https://doi.org/10.1021/acsomega.8b00203)]
35. L. B. Peres, R. Anjos, L. C. Tappertzhofen, P. Feuser, P. Hermes de Araújo, K. Landfester, C. Sayer*, **R. Muñoz-Espí***. pH-Responsive Physically and Chemically Cross-Linked Glutamic-Acid-Based Hydrogels and Nanogels. *Eur. Polym. J.* **2018**, *101*, 341–349 [DOI: [10.1016/j.eurpolymj.2018.02.039](https://doi.org/10.1016/j.eurpolymj.2018.02.039)]
36. H. Lu*, H. Lutz, S. Roeters, M. A. Hood, A. Schäfer, **R. Muñoz-Espí**, R. Berger, M. Bonn, T. Weidner*. Calcium-Induced Molecular Rearrangement of Peptide Folds Enables Biomineralization of Vaterite Calcium Carbonate. *J. Am. Chem. Soc.* **2018**, *140*, 2793–2796 [DOI: [10.1021/jacs.8b00281](https://doi.org/10.1021/jacs.8b00281)]
37. W. E. G. Müller*, M. Neufurth, S. Wang, M. Ackermann, **R. Muñoz-Espí**, Q. Feng, H. C. Schröder and X. Wang. Amorphous, Smart, and Bioinspired Nano/Microparticles: A Biomaterial for Regeneration and Repair of Osteo-Articular Impairments In-Situ. *Int. J. Molec. Sci.* **2018**, *19*, 427 (19 pp.) [DOI: [10.3390/ijms19020427](https://doi.org/10.3390/ijms19020427)]
38. I. Schlegel, P. Renz, J. Simon, I. Lieberwirth, S. Pektor, N. Bausbacher, M. Miederer, V. Mailänder, **R. Muñoz-Espí**, K. Landfester, D. Crespy. Highly Loaded Semipermeable Nanocapsules for Magnetic Resonance Imaging. *Macromol. Biosci.* **2018**, *18*, 1700387 (12 pp.) [DOI: [10.1002/mabi.201700387](https://doi.org/10.1002/mabi.201700387)]
39. M. A. Hood, K. Landfester, **R. Muñoz-Espí***. Chitosan nanoparticles affect polymorph selection in crystallization of calcium carbonate. *Colloids Surf. A* **2018**, *540*, 48–52 [DOI: [10.1016/j.colsurfa.2017.12.048](https://doi.org/10.1016/j.colsurfa.2017.12.048)]
40. W. E. G. Müller*, M. Ackermann, S. Wang, M. Neufurth, Q. Feng, **R. Muñoz-Espí**, H. C. Schröder, X. Wang*. Inorganic polyphosphate induces accelerated tube formation of HUVEC endothelial cells. *Cell. Mol. Life Sci.* **2018**, *75*, 21–32 [DOI: [10.1007/s00018-017-2601-2](https://doi.org/10.1007/s00018-017-2601-2)]

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42. S. Jiang, Q. Li, J. Wang, K. Landfester, **R. Muñoz-Espí**, D. Crespy*. Nanofibrous Photocatalysts from Electrospun Nanocapsules. *Nanotechnology* **2017**, *28*, 405601 (9 pp.) [DOI: [10.1088/1361-6528/aa85f8](https://doi.org/10.1088/1361-6528/aa85f8)]
43. C. Benedetti, P. Flouda, A. Antonello, C. Rosenauer, F. F. Pérez-Pla, K. Landfester, S. Gross*, **R. Muñoz-Espí***. Zirconium oxocluster/polymer hybrid nanoparticles prepared by photoactivated miniemulsion copolymerization. *Nanotechnology* **2017**, *28*, 365603 (8 pp.) [DOI: [10.1088/1361-6528/aa7b6d](https://doi.org/10.1088/1361-6528/aa7b6d)]
44. I. Schlegel, **R. Muñoz-Espí**, P. Renz, I. Lieberwirth, G. Floudas, Y. Suzuki, D. Crespy*, K. Landfester*. Crystallinity Tunes Permeability of Polymer Nanocapsules. *Macromolecules* **2017**, *50*, 4725–4732 [DOI: [10.1021/acs.macromol.7b00667](https://doi.org/10.1021/acs.macromol.7b00667)]
45. M. A. Hood, N. Encinas, D. Vollmer, R. Graf, K. Landfester*, **R. Muñoz-Espí***. Controlling hydrophobicity of silica nanocapsules prepared from organosilanes. *Colloids Surf. A* **2017**, *532*, 172–177 [DOI: [10.1016/j.colsurfa.2017.05.047](https://doi.org/10.1016/j.colsurfa.2017.05.047)]
46. I. Singh, K. Landfester, **R. Muñoz-Espí***, A. Chandra*. Evolution of hollow nanostructures of hybrid $Ce_{1-x}Cu_xO_2$ under droplet confinement leading to synergetic effects on the physical properties. *Nanotechnology* **2017**, *28*, 075601 (12 pp.) [DOI: [10.1088/1361-6528/aa5376](https://doi.org/10.1088/1361-6528/aa5376)]
47. A. Antonello, G. Jakob, P. Dolcet, R. Momper, K. Landfester, **R. Muñoz-Espí***, S. Gross*. Synergy of Miniemulsion and Solvothermal Conditions for the Low Temperature Crystallization of Magnetic Nanostructured Transition Metal Ferrites. *Chem. Mater.* **2017**, *29*, 985–997 [DOI: [10.1021/acs.chemmater.6b03467](https://doi.org/10.1021/acs.chemmater.6b03467)]

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49. C. Benedetti, A. Cazzolaro, M. Carraro, R. Graf, K. Landfester, S. Gross*, **R. Muñoz-Espí***. Dual Role of Zirconium Oxoclusters in Hybrid Nanoparticles: Cross-Linkers and Catalytic Sites. *ACS Appl. Mater. Interf.* **2016**, *8*, 26275–26284 [DOI: [10.1021/acsami.6b07023](https://doi.org/10.1021/acsami.6b07023)]
50. L. B. Peres, L. C. Preiss, M. Wagner, F. Wurm, P. Hermes de Araújo, K. Landfester, **R. Muñoz-Espí***, C. Sayer*. ALTMET Polymerization of Amino-Acid-Based Monomers Targeting Controlled Drug Release. *Macromolecules* **2016**, *49*, 6723–6730 [DOI: [10.1021/acs.macromol.6b01530](https://doi.org/10.1021/acs.macromol.6b01530)]
51. M. J. Sanchis*, B. Redondo-Foj, M. Carsí, P. Ortiz-Serna, M. Culebras, C. M. Gómez, A. Cantarero, **R. Muñoz-Espí**. Controlling dielectrical properties of polymer blends through defined PEDOT nanostructures. *RSC Adv.* **2016**, *6*, 62024–62030 [DOI: [10.1039/C6RA05597D](https://doi.org/10.1039/C6RA05597D)]

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55. W. E. G. Müller*, E. Tolba, H. C. Schröder, **R. Muñoz-Espí**, B. Diehl-Seifert, X. Wang. Amorphous polyphosphate-hydroxyapatite: a morphogenetically active substrate for bone-related SaOS-2 cells in vitro. *Acta Biomater.* **2016**, *31*, 358–367 [DOI: [10.1016/j.actbio.2015.11.060](https://doi.org/10.1016/j.actbio.2015.11.060)]
56. A. Schoth, E. S. Adurahim, M. A. Bahattab, K. Landfester, **R. Muñoz-Espí***. Waterborne Polymer/Silica Hybrid Nanoparticles and their Structure in Coatings. *Macromol. Reaction Eng.* **2016**, *10*, 47–54 [DOI: [10.1002/mren.201500029](https://doi.org/10.1002/mren.201500029)]

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