

**CV Prof. Dr. Raffaella Buonsanti**

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Google Scholar ID: <https://scholar.google.ch/citations?user=cWUMss8AAAAJ&hl=en&oi=ao>

**Education**

2006 - 2010      PhD in Nanoscience, University of Salento, Italy. Advisors: Prof. P.D. Cozzoli  
2000 - 2006      Master degree in Chemistry, University of Bari

**Employment History**

March 2022 -      Associate Professor, EPFL  
2015 - 2022      Tenure-track Assistant Professor, EPFL  
2013 - 2015      Tenure-track Staff Scientist at the Joint Center for Artificial Photosynthesis, Materials  
Science Department, Lawrence Berkeley National Laboratory  
2012 - 2013      Project Scientist at the Molecular Foundry, Materials Science Department, Lawrence  
Berkeley National Laboratory  
2010 - 2012      Postdoctoral Researcher at the Molecular Foundry, Materials Science Department,  
Lawrence Berkeley National Laboratory

**Institutional Responsibilities and Service**

2023 - present    Member of the departmental steering committee  
2019 - present    Member of the CIME (EPFL Center of Electron Microscopy) Steering Committee  
2018 - 2022      Member of the Doctoral School Committee of Chemistry and Chemical Engineering  
2017 - 2021      Member of the Teaching Committee of Chemistry and Chemical Engineering  
2020              Member of the Sustainable Travels Working Group  
2019 - 2020      Member of the Nanosafe Working Group

**Approved Research Projects**

2024-2028      SNSF Project Grant N° 200021\_219715 "Design strategies for stable catalysts in CO<sub>2</sub>  
electroreduction"  
2023-2028      ERC CoG Tulip "Developing the Chemistry for Tunable Liquid Metal NanoParticles  
towards Reconfigurable Materials"  
2021-2024      SNSF Lead Agency Project "Synthesis and transformations of multimetallic  
nanoparticles for electrocatalysis"  
2020-2025      Co-PI and Work Package Leader in SNSF NCCR Catalysis  
2020-2023      Co-PI and Work Package Leader in FET ProActive LICROX "Light Assisted Solar Fuel  
Production by Artificial CO<sub>2</sub> reduction and Water Oxidation"  
2020-2022      Academic host for Dr. Kevin Rossi, Recipient of the Marie Curie Individual Fellowship,  
Title: "Nano2CORE: nanocrystals for CO<sub>2</sub> reduction"  
2020-2022      Academic host for Dr. James Pankhurst, Recipient of the Marie Curie Individual  
Fellowship, Title: "SURFCAT: Surface-functionalized nanocrystal catalysts for the  
electrochemical reduction of carbon dioxide"  
2017-2018      Swiss National Science Foundation, Scientific Exchange Grant N° IZSEZ0\_177984

	Title: "1st Winter School at EPFL Valais: Challenges and Opportunities in Energy Research"
2017-2020	Swiss National Science Foundation, AP Energy Grant N° PYAPP2_166897/1 Title: "Colloidal chemistry for engineering complex metal oxides to advance solar-to-fuels conversion studies"
2017-2021	ERC-STG-Grant Title" HYCAT: multifunctional hybrid platforms based on colloidal nanocrystals to advance CO2 conversion studies"
2017-2019	Academic host for Dr. Michal Strach, Recipient of the Marie Curie Individual Fellowship, Title: "NANOAIID: Advanced in-situ techniques for the development of metal oxide nanostructures"
2016-2018	Academic host for Dr. Anna Loiudice, Recipient of the Marie Curie Reintegration Fellowship, Title: "NanoINCAGE: Luminescent nanocrystals in a cage for solar-to-fuels conversion",
2016-2020	Gaznat Research Grant , Title: "Electrochemical conversion of CO2 into value-added chemicals"
2016-2018	Project Grant in National Center of Competence in Research MARVEL Title "Colloidal nanocrystals as model systems to uncover structure/properties relation in CO2 electroreduction"

### Supervision of Junior Researchers

- Currently promotor of 6 doctoral theses, 7 defended
- Currently supervising 3 postdoctoral researchers, 8 past
- Participation in 33 PhD committees, 35 candidacy exams

### Teaching Activities

2022 – present	Introduction to chemical engineering Laboratory Works
2018 – present	Nanomaterials for chemical engineering application, Master Course
2017 – 2019	Colloidal synthesis of nanoparticles and their energy applications, PhD Course
2017 – present	Introduction to Transport Phenomena, Bachelor Course
2016 – present	Project coach for Chemical product design, Master Course

### Membership in Panels, Boards, etc. and Individual Scientific Reviewing Activities

2021 – present	Associate Editor of ACS Catalysis
2023 – present	Member of the Editorial Advisory Board of ACS Energy Letters
2022 – 2023	Chair of the Nanoscience Subdivision of the ACS Division of Inorganic Chemistry
2021 – 2022	Chair-Elect of the Nanoscience Subdivision of the ACS Division of Inorganic Chemistry
2020 – present	Member of the Editorial Advisory Board of Chemistry of Materials
2020 – present	Member of the Editorial Advisory Board for Nanoscale
2020 – present	Member of the Editorial Advisory Board for Chemical Communications
2020 – present	Member of the Editorial Advisory Board for Dalton Transactions
2020 – 2021	Member of the Early Career Advisory Board for ACS Materials Letters
2018 – 2019	Member of the Early Career Advisory Board for ACS Catalysis

### Active Membership in Scientific Societies, Fellowships in Renowned Academies

Member of the Swiss Chemical Society (from **2016**), Royal Chemical Society (from **2017**), Materials Research Society (from **2015**)

**Prizes, Awards, Fellowships**

2023	Eastman Lectures in Catalysis (UC Berkeley, along with Marc Koper, William Mustain, Henry Sheldon White)
2021	Swiss Chemical Society Werner Price
2019	Thieme Chemistry Journal Award
2019	European Chemical Society Lecture Award
2019	Royal Chemical Society ChemComm Emerging Investigator Lectureship
2018	Endowed Chair from the Sandoz Family Foundation

**Raffaella Buonsanti, Research output**

As of Oct 2023, Professor Raffaella Buonsanti has co-authored a total of **118 peer-review publications** in international journals, 42 as a PhD and Postdoctoral researcher and **74 during her independent career**. These publications have received over 9500 literature citations and an **h-index of 48**

The full list of publications can be found here:

<https://scholar.google.ch/citations?user=cWUMss8AAAAJ&hl=en&oi=ao>

The 1<sup>st</sup> and 4<sup>th</sup> most cited publications have been published during independent career

**Publications in international peer-reviewed scientific journals (since at EPFL)**

1. J. Vavra+, G. P. L. Ramona+, F. Dattila, A. Kormányos, T. Priamushko, P. P. Albertini, A. Loiudice, S. Cherevko, N. Lopéz, R. Buonsanti "Cu+ transient species mediate the reconstruction of copper electrocatalysts for CO<sub>2</sub> reduction" *Nature Catal.* 2023, accepted
2. P. B. Green, O. Segura Lecina, P. Albertini, A. Loiudice, R. Buonsanti "Colloidal-ALD Grown Metal Oxide Shells Enable the Synthesis of Photoactive Ligand/Nanocrystal Composite Materials" *J. Am. Chem. Soc.* 2023, 145, 8189.
3. V. Okatenko, A. Loiudice, M. A. Newton, D.C. Stoian, A. Blokhina, A. N. Chen, K. Rossi, R. Buonsanti "Alloying as a Strategy to Boost the Stability of Copper Nanocatalysts during the Electrochemical CO<sub>2</sub> Reduction Reaction" *J. Am. Chem. Soc.* **2023**, 145, 5370
4. R. Buonsanti "Electronic Lab Notebooks for Materials Synthesis" *Chem. Mater.* **2023**, 35, 805. This article is an invited Editorial.
5. M. Wang, A. Loiudice, V. Okatenko, I.D. Sharp, A. Llobet, R. Buonsanti "The spatial distribution of cobalt phtalocyanine and copper nanocubes controls the selectivity towards C<sub>2</sub> products in tandem electrocatalytic CO<sub>2</sub> reduction", *Chem. Sci.* **2023**, 14, 1097
6. M. Wang, V. Nikolaou, A. Loiudice, I.D. Sharp, A. Llobet, R. Buonsanti "Tandem electrocatalytic CO<sub>2</sub> reduction with Fe-porphyrins and Cu nanocubes enhances ethylene production", *Chem. Sci.* **2022**, 13, 12673
7. L. Castilla-Amorós, P. Schouwink, E. Oveisi, R. Buonsanti "Tailoring Morphology and Elemental Distribution of CuIn Nanocrystals via Galvanic Replacement", *J. Am. Chem. Soc.* **2022**, 144, 18286.
8. J. R. Pankhurst, L. Castilla-Amorós, D. Stoian, J. Vavra, V. Mantella, P. P. Albertini, R. Buonsanti "Copper-Phosphonate Lamella Intermediates Control the Shape of Colloidal Copper Nanocrystals" *J. Am. Chem. Soc.* **2022**, 144, 12261.
9. V. Okatenko, L. Castilla-Amorós, D. Stoian, J. Vávra, A. Loiudice, R. Buonsanti "The native oxide skin of liquid metal Ga nanoparticles prevents their rapid coalescence during electrocatalysis" *J. Am. Chem. Soc.* **2022**, 144, 1053.

10. A. Loiudice, R. Buonsanti\* "Reaction Intermediates in the Synthesis of Colloidal Nanocrystals" *Nature Synthesis* **2022**, 1, 334.
11. L. Zaza, K. Rossi, R. Buonsanti\* "Well-Defined Copper-Based Nanocatalysts for Selective Electrochemical Reduction of CO<sub>2</sub> to C<sub>2</sub> products" *ACS Energy Lett* **2022**, 7, 1284
12. O. Segura Lecina, M. Hope, A. Venkatesh, S. Björgvinsdóttir, K. Rossi, A. Loiudice, L. Emsley, R. Buonsanti\* "Colloidal-ALD Grown Hybrid Shells Nucleate via a Ligand–Precursor Complex" *J. Am. Chem. Soc.* **2022**, 144, 3998
13. K. Rossi, R. Buonsanti\* "Shaping Copper Nanocatalysts to Steer Selectivity in the Electrochemical CO<sub>2</sub> Reduction Reaction" *Acc. Chem. Res.* **2022**, 55, 629
14. G.O. Larrazábal, V. Okatenko, I. Chorkendorff, R. Buonsanti, B. Seger\* "An investigation of ethylene and propylene production from CO<sub>2</sub> reduction over copper nanocubes in MEA-type electrolyzer" *ACS Appl. Mater. Interf.* **2022**, 14, 779
15. L. Castilla-Amoros, T.-C. Chang Chien, J. R. Pankhurst, R. Buonsanti\* "Modulating the Reactivity of Liquid Ga Nanoparticle Inks by Modifying their Surface Chemistry" *J. Am. Chem. Soc.* **2022**, 144, 1993
16. A. Loiudice, B.P.G. Niau, R. Buonsanti\* "Crystal phase control of ternary metal oxides by solid-state synthesis with nanocrystals" *ACS Nanoscale Au* **2022**, doi: 10.1021/acsnanoscienceau.1c00049
17. S.B. Varandili, D. Stoian, J. Vavra, K. Rossi, J. R. Pankhurst, Y. Guntern, N. Lopez, R. Buonsanti\* "Elucidating the structure-dependent selectivity towards methane and ethanol of CuZn in the CO<sub>2</sub> electroreduction using tailored Cu/ZnO precatalysts " *Chem. Sci.* **2021**, 12, 14484
18. P. Iyengar, M. J. Kolb, J. Pankhurst, F. Calle Vallejo\*, R. Buonsanti\* "Theory-guided enhancement of CO<sub>2</sub> reduction to ethanol on Ag-Cu tandem catalysts via particle-size effects" *ACS Catalysis* **2021**, 11, 13330
19. S.W. Sheehan and R. Buonsanti "Deriving value from CO<sub>2</sub>: From catalyst design to industrial implementation" *Chem. Catalysis* **2021**, 1, 751.
20. R. Buonsanti and S.W. Sheehan "Catalyst discovery for electrochemical CO<sub>2</sub> conversion" *Chem. Catalysis* **2021**, 1, 754.
21. R. Buonsanti "Copper, my precious!" *Nature Catalysis* **2021**, 4, 736
22. A. Loiudice, A. Segura Lecina, A. Bornet, J. Luther, R. Buonsanti\* "Ligand locking on quantum dot surfaces via a mild reactive surface treatment" *J. Am. Chem. Soc.* **2021**, 143, 13418
23. S.B. Varandili, D. Stoian, J. Vavra, K. Rossi, J. R. Pankhurst, Y. Guntern, N. Lopez, R. Buonsanti\* "Elucidating the structure-dependent selectivity towards methane and ethanol of CuZn in the CO<sub>2</sub> electroreduction using tailored Cu/ZnO precatalysts " *Chem. Sci.* **2021**, 12, 14484.
24. P. Iyengar, M. J. Kolb, J. Pankhurst, F. Calle Vallejo\*, R. Buonsanti\* "Elucidating the Facet-dependent Selectivity for CO<sub>2</sub> Electroreduction to Ethanol of Cu-Ag Tandem Catalysts" *ACS Catalysis* **2021**, 11, 4456
25. S.W. Sheehan and R. Buonsanti "Deriving value from CO<sub>2</sub>: From catalyst design to industrial implementation" *Chem. Catalysis* **2021**, just accepted
26. R. Buonsanti and S.W. Sheehan "Catalyst discovery for electrochemical CO<sub>2</sub> conversion" *Chem. Catalysis* **2021**, just accepted

27. R. Buonsanti "Copper, my precious!" *Nature Catalysis* **2021**, 4, 736
28. A. Loiudice, A. Segura Lecina, A. Bornet, J. Luther, R. Buonsanti\* "Ligand locking on quantum dot surfaces via a mild reactive surface treatment" *J. Am. Chem. Soc.* **2021**, 143, 13418
29. R. Buonsanti "Developing the Chemistry of Colloidal Cu Nanocrystals to Advance the CO<sub>2</sub> Electrochemical Reduction" *Chimia* **2021**, 75, 598
30. R. Buonsanti and W. Smith "Emerging collaborations at the forefront of growth in electrochemical synthesis" *iScience* **2021**, 24, 102639
31. R. Buonsanti \* and N. Zheng\* "The Inorganic Chemistry of Nanoparticles" *Inorg. Chem.* **2021**, 60, 4179
32. P. Iyengar, M. Kolb, J. Pankhurst, F. Calle Vallejo, R. Buonsanti\* "Elucidating the Facet-dependent Selectivity for CO<sub>2</sub> Electroreduction to Ethanol of Cu-Ag Tandem Catalysts" *ACS Catalysis* **2021**, 11, 4456
33. Y. Guntern, J. Vavra, V. Karve, S. Varandili, O. Segura Lecina, C. Gadiyar, R. Buonsanti\* "Synthetic Tunability of Colloidal Covalent Organic Framework/Nanocrystal Hybrids" *Chem. Mater.* **2021**, 33, 2646.
34. J. Pankhurst, P. Iyengar, V. Okatenko, R. Buonsanti\* "Copper nanocrystal morphology determines the viability of molecular surface functionalization in tuning electrocatalytic behavior in CO<sub>2</sub> reduction", *Inorg. Chem.* **2021**, 60, 6939
35. R. Buonsanti\*, A. Loiudice, V. Mantella "Colloidal Nanocrystals as Precursors and Intermediates in Solid State Reactions for Multinary Oxide Nanomaterials" *Acc. Chem. Res.* **2021**, 54, 754
36. Y.T. Guntern, V. Okatenko, J. Pankhurst, S.B. Varandili, P. Iyengar, C. Koolen, D. Stoian, J. Vavra, R. Buonsanti\*, Colloidal Nanocrystals as Electrocatalysts with Tunable Activity and Selectivity, *ACS Catal.* **2021**, 11, 1248
37. R. Buonsanti\* "Magic clusters are better together" *Nature Mater.* **2021**, 20, 580
38. V. Mantella, S.B. Varandili, J. R. Pankhurst, R. Buonsanti\* "Colloidal synthesis of Cu-M-S (M=V, Cr, Mn) nanocrystals by tuning the copper precursor reactivity" *Chem. Mater.* **2020**, 32, 9780
39. S.B. Varandili, D. Stoian, Jan Vavra, J. R. Pankhurst, R. Buonsanti\* "Ligand-mediated formation of Cu/metal oxide hybrid nanocrystals with tunable number of interfaces " *Chem. Sci.* **2020**, 11, 13094
40. L. Castilla-Amoros, D. Stoian, J. R. Pankhurst, S.B. Varandili, R. Buonsanti\* "Exploring the chemical reactivity of gallium liquid metal nanoparticles in galvanic replacement" *J. Am. Chem. Soc.* **2020**, 2020, 142, 19283
41. V. Mantella, L. Castilla-Amoros, R. Buonsanti\* "Shaping non-noble metal nanocrystals via colloidal chemistry" *Chem. Sci.* **2020**, 11, 11394
42. J. Vavra, T.-H. Shen, D. Stoian, V. Tileli\*, R. Buonsanti\* "Real-time monitoring reveals dissolution/redeposition mechanism in Cu nanocatalysts during the initial stages of the CO<sub>2</sub> reduction reaction " *Angew. Chemie. Int. Ed.* **2020**, 60, 1347.
43. C. Gadiyar, A. Loiudice, F. D'Ambra, E. Oveisi, D. Stoian, P. Iyengar, L. Castilla-Amoros, V. Mantella, R. Buonsanti\* "Nanocrystals as precursors in solid state reactions for size- and shape- controlled polyelemental nanomaterials" *J. Am. Chem. Soc.* **2020**, 142, 15931
44. J.R. Pankhurst, P. Iyengar, A. Loiudice, M. Mensi, R. Buonsanti\* "Metal-ligand bond strength determines the fate of organic ligands on the catalyst surface during the electrochemical CO<sub>2</sub> reduction reaction" *Chem. Sci.* **2020**, 11,929

45. A. Loiudice, O. Segura Lecina, R. Buonsanti\* "Atomic Control in Multicomponent Nanomaterials: when Colloidal Chemistry meets Atomic Layer Deposition" *ACS Mater. Lett.* **2020**, 2, 1182
46. R. Buonsanti, J. M. Buriak, L. Cabana, B. M. Cossairt, M. Dasog, S. Dehnen, J. L. Dempsey, A. Nirmala Grace, D. Koziej, L. McElwee-White, C. Thomas, J. Y. Yang "Checking in with Women Materials Scientists during a Global Pandemic: May 2020" *Chem. Mater.* **2020**, 32, 4859
47. V. Mantella+, M. Strach+, K. Frank, J.R. Pankhurst, D. Stoian, C. Gadiyar, B. Nickel, R. Buonsanti\* "Polymer Lamellae as Reaction Intermediates of Cu Nanospheres Evidenced by In-situ-X-ray Studies" *Angew. Chemie. Int. Ed.* **2020**, 59, 11627.
48. S. Sarys, S. Dona, V. Niemann, A. Loiudice, R. Buonsanti\* "Optimizing the Atomic Layer Deposition of Alumina on Perovskite Nanocrystals Films by Using O<sub>2</sub> as a Molecular Probe" *Helv. Chim. Acta* **2020**, 103, e2000055.
49. A. Loiudice, S. Saris, R. Buonsanti\* "A Tunable Metal Oxide Shell as a Spacer to Study Energy Transfer in Semiconductor Nanocrystals" *J. Phys. Chem. Lett.* **2020**, 2020, 11, 3430
50. G. De Gregorio, T. Burdyny, A. Loiudice, P. Iyengar, W. Smith, R. Buonsanti\* "Facet-dependent selectivity of Cu catalysts in electrochemical CO<sub>2</sub> reduction at commercially viable current densities", *ACS Catalysis* **2020**, 10, 4854
51. S. Popović, M. , Smiljanić, P. Jovanovic, J. Vavra, R. Buonsanti\*, N. Hodnik\* "Stability and degradation mechanisms of copper-based catalysts for electrochemical CO<sub>2</sub> reduction", *Angew. Chemie. Int. Ed.* **2020**, doi 10.1002/anie.202000617
52. S. Saris, A. Loiudice, M. Mensi, R. Buonsanti\* "Exploring Energy Transfer in a Metal/Perovskite Nanocrystal Antenna to Drive Photocatalysis" *J. Phys. Chem. Lett.* **2019**, 10, 7797.
53. S. Sarys, V. Niemann, V. Mantella, A. Loiudice, R. Buonsanti\* "Understanding the mechanism of metal-induced degradation in perovskite nanocrystals" *Nanoscale* **2019**, 11, 19543
54. M. Strach, V. Mantella, J.R. Pankhurst, P. Iyengar, A. Loiudice, S. Das, C. Corminboeuf, W. van Beek, R. Buonsanti\* "Insights into reaction intermediates to predict synthetic pathways for shape-controlled metal nanocrystals" *J. Am. Chem. Soc.* **2019**, 141, 16312
55. J.R. Pankhurst, Y.T. Guntern, M. Mensi, R. Buonsanti\* "Molecular tunability of surface-functionalized metal nanocrystals for selective electrochemical CO<sub>2</sub> reduction" *Chem. Sci.* **2019**, 10, 10356
56. R. Buonsanti\* "A solid advance in electrolytes" *Nature Energy* **2019**, 4, 728
57. G. Mangione, J.Huang, R. Buonsanti, C. Corminboeuf\* "Dual-facet mechanism in copper nanocubes for electrochemical CO<sub>2</sub> reduction to ethylene" *J. Phys. Chem. Lett.* **2019**, 10, 4259
58. Y.T. Guntern, J.R. Pankhurst, J. Vávra, M. Mensi, V. Mantella, P. Schouwink, R. Buonsanti\* "Nanocrystal/Metal-Organic Framework Hybrids as Electrocatalytic Platforms for CO<sub>2</sub> Conversion" *Angew. Chemie. Int. Ed.* **2019**, 58, 2.
59. A. Loiudice, M. Strach, S. Saris, D. Chernyshov, R. Buonsanti\* "Universal Oxide Shell Growth Enables In-situ Structural Studies of Perovskite Nanocrystals during the Anion Exchange Reaction" *J. Am. Chem. Soc.* **2019**, 141, 8254.
60. P. Iyengar J. Huang, G.L. De Gregorio, C. Gadiyar, R. Buonsanti\* "Size-dependent selectivity of Cu nano-octahedra catalysts for the electrochemical CO<sub>2</sub> reduction to CH<sub>4</sub>" *Chem. Commun.* **2019**, 55, 8796.
61. S. B. Varandili, J. Huang, E. Oveisi, G.L. De Gregorio, M. Mensi, M. Strach, J. Vavra, C. Gadiyar, A. Bhowmik, R. Buonsanti\* "Synthesis of Cu/CeO<sub>2-x</sub> heterodimers with interfacial active sites to promote CO<sub>2</sub> electroreduction" *ACS Catalysis* **2019**, 9, 5035

62. J. Huang, M. Mounir, E. Oveisi, V. Mantella, R. Buonsanti\* "Structural sensitivities in bimetallic catalysts for electrochemical CO<sub>2</sub> reduction revealed by Ag-Cu nanodimers" *J. Am. Chem. Soc.* **2019**, 141, 2490.
63. V. Mantella, S. Ninova, S. Saris, A. Loiudice, U. Aschauer, R. Buonsanti\* "Synthesis and size-dependent optical properties of intermediate band gap Cu<sub>3</sub>VS<sub>4</sub> nanocrystals" *Chem. Mater.* **2019**, 31, 532.
64. J. Huang, R. Buonsanti\* "Colloidal nanocrystals as heterogeneous catalysts for electrochemical CO<sub>2</sub> conversion" *Chem. Mater.* **2019**, 31, 13. *Up-and-Coming Perspective. ACS Editors Choice.*
65. M. Scarongella<sup>+</sup>, C. Gadiyar<sup>+</sup>, M. Strach, L. Rimoldi, A. Loiudice, R. Buonsanti\* "Assembly of β-Cu<sub>2</sub>V<sub>2</sub>O<sub>7</sub>/WO<sub>3</sub> nanocomposites and the impact of their composition on structure and photoelectrochemical properties" *J. Mater. Chem. C.* **2018**, 6, 1262. *Emerging Investigators Collection.*
66. J. Wiktor, I. Reshetnyak, M. Strach, M. Scarongella, R. Buonsanti, A. Pasquarello "Sizable excitonic effects undermining the photocatalytic efficiency of β-Cu<sub>2</sub>V<sub>2</sub>O<sub>7</sub>" *J. Phys. Chem. Lett.* **2018**, 9, 5698.
67. J. Huang, N. Hörmann, E. Oveisi, A. Loiudice, G. De Gregorio, O. Andreussi, N. Marzari, R. Buonsanti\* "Potential-induced nanoclustering of metallic catalysts during electrochemical CO<sub>2</sub> reduction" *Nature Comm.* **2018**, 9, 3117.
68. C. Gadiyar, M. Strach, P. Schouwink, A. Loiudice, R. Buonsanti\* "Chemical transformations at the nanoscale: nanocrystal-seeded synthesis of β-Cu<sub>2</sub>V<sub>2</sub>O<sub>7</sub> with enhanced photoconversion efficiencies" *Chem. Sci.* **2018**, 9, 5658.
69. W. Luo, W. Xie, R. Mutschler, E. Oveisi, G. L. De Gregorio, R. Buonsanti, A. Zuttel "Selective and stable electroreduction of CO<sub>2</sub> to CO at the copper/indium interface" *ACS Catal.* **2018**, 8, 6571.
70. Z. Luo, D. Marson, Q.K. Ong, A. Loiudice, J. Kohlbrecher, A. Radulescu, A. Krause-Heuer, T. Darwish, S. Balog, R. Buonsanti, D.I. Svergun, P. Posocco, F. Stellacci, Quantitative 3D determination of self-assembled structures on nanoparticles using small angle neutron scattering, *Nature Comm.* **2018**, 9, 1343.
71. R. Sharma, A. M. Sawvel, B. Barton, A. Dong, R. Buonsanti, A. Llodes, E. Schaible, S. Axnanda, Z. Liu, J. J Urban, D. Nordlund, C. Kisielowski, D. J. Milliron "Modulation of Carrier Type in Nanocrystal-in-Matrix Composites by Interfacial Doping" *Chem. Mater.* **2018**, 30, 2544.
72. A. Loiudice<sup>+</sup>, S. Saris<sup>+</sup>, E. Oveisi, D.T.L. Alexander, R. Buonsanti\*, CsPbBr<sub>3</sub> QD/AlOx inorganic nanocomposites with exceptional stability in water, light and heat. *Angew. Chem. Int. Ed.* **2017**, 56, 10696.
73. L. H. Hess, J.K. Cooper, A. Loiudice, C.-M. Jiang, R. Buonsanti\*, I.D. Sharp\*, Probing interfacial energetics and charge transfer kinetics in semiconductor nanocomposites: New insights into heterostructured TiO<sub>2</sub>/BiVO<sub>4</sub> photoanodes, *Nano Energy* **2017**, 34, 375.
74. I. D. Sharp\*, J. K. Cooper, F. M. Toma, R. Buonsanti, Bismuth vanadate as a platform for accelerating discovery and development of complex transition metal oxide photoanodes, *ACS Energy Letters* **2017**, 2, 139.
75. C. Gadiyar, A. Loiudice, R. Buonsanti\*, Colloidal nanocrystals for photoelectrochemical and photocatalytic water splitting, *J. Phys. D: Appl. Phys.* **2017**, 50, 074006.
76. R. Buonsanti\*, Colloidal chemistry to advance studies in artificial photosynthesis, *Chimia* **2016**, 70, 780.
77. I. Luz<sup>+</sup>, A. Loiudice<sup>+</sup>, D.T. Sun, W. L. Queen, R. Buonsanti\*, Understanding the formation mechanism of metal nanocrystal@MOF-74 hybrids, *Chem. Mater.* **2016**, 28, 3839.
78. A. Loiudice, P. Lobaccaro, E.A. Kamali, T. Thao, B.H. Huang, J.W. Ager, R. Buonsanti\*, Tailoring Copper Nanocrystals towards C<sub>2</sub> Products in Electrochemical CO<sub>2</sub> reduction, *Angew. Chemie. Int. Ed.* **2016**, 55, 5789.

Invited contributions to international conferences since at EPFL

**Conferences:**

EuropaCat, <https://www.europacat2023.cz/>, Prague, August 27 -September 1 **2023**

Nanax 10, Nanoscience with nanocrystals <http://nanax.org/>, Klosterneuburg, Austria, 3-7 July **2023**

Argonne National Laboratory User Meeting, Chicago **2023**, joined virtually (<https://www.anl.gov/cnm/apscnm-users-meetings>)

International Conference on Clean Energy for Carbon Neutrality, Hong Kong **2023**, joined virtually (<https://www.cityu.edu.hk/hkice/iccecn2023/program03.html>)

MatSus2023, symposia “Chemistry of Materials” and “Electrocatalysis for the Production of Fuels and Chemicals”, Valencia **2023**

MRS Fall Symposium “Challenges and opportunities in solution synthesis of functional nanomaterials”, Boston, **2022**

Grk Nanohybrid Conference, Hamburg, **2022**

Sol-Gel Conference, Lyon, **2022**

Royal Spanish Chemical Society Biannual Meeting, Granada, **2022**

GRC Renewable Energy: Solar Fuels, Tuscany, **2022**

Spring ACS, ACS Division of Inorganic Chemistry, 65<sup>th</sup> symposium, **2022**

MRS Fall, Symposium ““Electrocatalytic Materials to Sustainably Convert Atmospheric C, H, O, and N into Fuels and Chemicals”, Boston, **2021**, (online)

NanoGe Fall Meeting, Symposium #SolCat21, **2021** (online)

Account of Chemical Research Journal Club “Transformative Inorganic Nanocrystals”, **2021** (online)

NanoGe The internet conference of Colloidal Quantum Dots, **2021** (online)

Middle Atlantic Regional Meeting of the American Chemical Society, **2021** (online)

ACS Spring Virtual Meeting in Symposia CATL-“Well-Defined Materials for Heterogeneous Catalysis: Synthesis, Characterization, and Performance Studies” and COLL-“Nanomaterials, **2021**

The internet NanoGe Conference on Nanocrystals (iNCNC), **2021**

Online NanoGe Spring Meeting, Symposium “Photophysics of nanoscale semiconductors” **2021**

Pacificchem, Honolulu, December **2020** (cancelled for COVID)

NanoGe Online Conference, Fundamental Processes in Semiconductor Nanocrystals, November **2020**

Cell Press Webinar Light/Matter Interactions, June **2020**

NanoGe Online Meetup: Structure-Function Relationships in CO<sub>2</sub> electrocatalysts, June **2020**

NanoGe Online Meetup: Shape-Controlled Nanocrystals: Synthesis, Characterization Methods and Applications, May **2020**

Electrochemistry, German Chemical Society Conference, Berlin **2020** (cancelled for COVID)

EuChemS, European Chemical Society Conference, Lisbon **2020** (cancelled for COVID)

GRC Inorganic Chemistry, Newport, **2020** (cancelled for COVID)

GRC Renewable Energy: Solar Fuels, Tuscany, **2020** (moved to 2022)

ACS, Philadelphia, **2020** (cancelled for COVID)



Annic\_Applied Nanotechnology and Nanoscience International Conference, Paris, **2019**

NanoGe Conference, Solar Fuels, Berlin, **2019**

Nature Conference Solar Fuels, Wuhan, **2019**

ACS Fall Meeting, San Diego, **2019**

GRC Nanomaterials for Application in Energy technology, Ventura, **2019**

GRC Colloidal Semiconductor Nanocrystals, Smithfield, **2018**

ACS Fall Meeting, Boston, **2018**

E-MRS Spring Meeting, Strasbourg, **2018**

MRS Fall Meeting, Boston, **2017**

EuroMat, Thessaloniki, **2017**

21<sup>st</sup> Solid State Ionics, Padova, **2017**

RSC ISACS21 Challenges in Nanoscience, Beijing, **2017**

### **Schools, Workshops, Symposia:**

UK-Swiss Bilateral Meeting on Net Zero organized by Royal Chemical Society and Swiss Chemical Society, 15-16 June **2023**, London

International Sol-Gel Society's eSeminar series\_May **2023**

iCANX Talks, Vol. 132, **2023**: <https://www.ican-x.com/icanx-talks>

International Symposium on Photo & Electro Catalytic CO<sub>2</sub> Reduction\_Nankai University, September **2022**

International Symposium on Photo & Electro Catalytic CO<sub>2</sub> Reduction\_Nankai University, November **2021** (online, [link](#))

ICFO-Univ of Toronto-PFL-Stanford International School Photons for Green Energy, October **2021** (online)

DFG (German Chemical Society) Colloquium "Catalysts and reactors under dynamic conditions for energy storage and conversion", February **2021** (online)

Summer School of the European Federation of Catalysis Societies, Slovenia, September **2020** (online)

Online Summer School « Electrocatalysts for Energy Applications", July **2020**

ES3 Symposium\_Exciton Engineering in Emerging Semiconductors, Madrid, **2020**

ETH-Japan Catalysis Workshop, ETH Zurich, **2019**

SUNCAT Summer School, Stanford, USA, **2019**

Energy-X Workshop, Brussels, **2019**

FOTOFUEL Workshop, Madrid, Spain, **2019**

SurfCat Summer School, Gilleleje, Denmark, **2018**

### **Department seminars:**

#### **2023:**

UC Berkeley, Kavli Energy NanoScience Institute

Max-Planck-Institut für Kohlenforschung, Mulheim;

Department of Chemistry, Jilian University (online);

Department of Chemistry, Imperial College;

Department of Chemistry, Cambridge;

Department of Chemistry (plenary at the KAVLI Energy Nanoscience Institute), UC Berkeley

**2022:**

Department of chemistry, PChem Seminar, LMU;

Max Planck Institute (MPI) for Dynamics of Complex Technical Systems;

Department of Chemistry (Inorg Chem Seminar), MIT

**2021** : UW (Seattle), UMass (Boston), NYU (New York), University of Virginia, Indiana University

**2020** : Université de Paris, Fritz Haber Institute, ICIQ

**2019** : TU Delft, University of Barcellona, LMU Munich, DTU Physics

**2018** : University of Oslo, KAUST

**2017** : ETH, King's College London, University of Geneva

**2016** : University of Bern, Paul Scherrer Institute, Fudan University

**Conference Organization**

2026 Elected co-chair of the Gordon Research Conference “Colloidal Semiconductor Nanocrystals”

2024 General chair of the NanoGe MATSUS24 Fall Meeting <https://www.nanoge.org/MATSUSFall24/home>

2022 Symposium organizer at NanoGe Fall 2022 Meeting (“#Suschem- Materials and electrochemistry for sustainable fuels and chemicals”)

2022 Symposium organizer at ACS Fall 2022 Meeting (“Inorganic Nanoscience Award”)

2022 Symposium organizer at ACS Spring 2022 Meeting (“Well-Defined Materials for Heterogeneous Catalysis”)

2021 Symposium organizer at ACS Spring 2021 Meeting (“Inorganic Nanoscience Award”)

2021 Symposium organizer at MRS Fall 2021 Meeting (“Women in Materials Science: Pioneers and a Vision for a More Inclusive Future”)

2020 Organizer of the online NanoGe Internet Conference for Quantum Dots iCQD (<https://www.nanoge.org/iCQD/home>)

2018 Chair of the 1<sup>st</sup> Winter School “Challenges and Opportunities for Energy Research” (<https://nrq2018.epfl.ch>)

**OUTREACH ACTIVITIES**

Participation to “[ScienceGirls](#)”

Participation to the event [Scientastic](#) – Festival des Sciences de l’ EPFL (April 29-30, 2017) to promote EPFL Valais to the general public.

Interview for a local magazine [Valais Valeur Ajoutée](#) to reach out to general public