# Francesca Maria Toma

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## Professional Experience

July 2018 – Present: **Career Materials Staff Scientist** in the Chemical Science Division at Lawrence Berkeley National Lab. *Thrust Coordinator* of the Materials Integration and Components at the Joint Center for Artificial Photosynthesis (JCAP). Principal Investigator (PI) in Thrust 1, 2, 3, and 4 (Electrocatalysis, Photoelectrocatalysis, Integration, and Prototyping, respectively) at JCAP, and PI in the Chemical Science Division.
*Research Program:* Materials synthesis and integration, development, and characterization of catalysts, semiconductors, and coatings for energy application with specific focus on artificial photosynthesis.

Feb 2014 – July 2018: **Career Track Materials Staff Scientist** in the Chemical Science Division at Lawrence Berkeley National Lab.

Oct 2013 – Jan 2014: **Project Scientist** in the Membrane and Mesoscale Assemblies Project at the Joint Center for Artificial Photosynthesis, Chemical Sciences Division, Lawrence Berkeley National Lab. *Project:* Development and execution of in depth materials characterization for catalysts, semiconductors, and coatings that have been integrated into assemblies ranging from mesoscale to macroscale.

Jan 2013 – Sept 2013: **Post-Doctoral Fellow** in the Department of Chemistry, at the University of California Berkeley. Advisor: Prof. F. R. Fischer (University of California Berkeley)
*Project:* Synthesis and characterization of molecular precursors for the fabrication of edge-doped graphene nanoribbons for organic electronics.

Jun 2011 – Dec 2012: **Marie Curie Researcher** at the Center for Polymers and Organic Solids, in the Department of Chemistry and Biochemistry, and in the Department of Materials at the University of California Santa Barbara. Advisors: Prof. F. Wudl and Prof. G. D. Stucky (University of California Santa Barbara)
*Project*: Synthesis and characterization of a new class of dendrimeric (poly)imides and decacyclene-based small molecules, electrodeposition of inorganic semiconductors, fabrication of hybrid and organic solar cells.

Nov 2009 – May 2011 **Post-Doctoral Fellow** in the Department of Chemistry and Pharmaceutical Sciences, at the University of Trieste, Italy. Advisor: Prof. M. Prato (University of Trieste)
*Project*: Functionalization, characterization, and application of carbon nanostructures for regenerative medicine and renewable energy.

## Education

2009 **International School of Advanced Studies (SISSA)**, Trieste, Italy: Ph.D. in Statistical and Molecular Biophysics.
*Thesis title*: "Covalently functionalized carbon nanotubes and their biological applications" Advisors: Prof. G. Scoles (Sissa, Princeton) and Prof. M. Prato (University of Trieste)

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| 2006 | **University of Padova**, Italy, Master degree in in Pharmaceutical Chemistry and Technology, grade 110/110 *cum laude*.<br>*Thesis title*: "Photo-addition of Fluphenazine to proteins and study of the photochemistry of 5-Fluorouracil"<br>Advisors: Prof. G. Miolo and Prof. S. Caffieri (University of Padova) |

## Professional Development

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| 2015/2016 | Leadership Development Program for Emerging Leaders<br>Business School, Center for Executive Education, University California, Berkeley<br>*Invited to participate by the Director of the Lawrence Berkeley National Laboratory* |

## Funding (PI or Co-PI)

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| 2015-2020 | Joint Center for Artificial Photosynthesis (JCAP), Energy Innovation Hub – Fuels from Sunlight. Office of Science, Basic Energy Sciences, U.S. Department of Energy, DE-SC0004993 (Co-PI, $15M/year) |
| 2018 | BaCaTec Project Award: Organophosphonate-based catalysts for the photochemical selective conversion of carbon dioxide (Co-Pi, $5k/six months) |
| 2018-2020 | HydroGEN Advanced Water Splitting Materials, DOE's Fuel Cell Technologies Office in the Office of Energy Efficiency and Renewable Energy project, U.S. Department of Energy, DE-AC02-05CH11231 ($300k/year, node PI) |
| 2015-2017 | "Synthesis of integrated photoelectrodes for CO2RR" JCAP Carryover Funding Proposal Program ($122k/year, PI) |
| 2015-2017 | LDRD (Spotlighting Catalysis: *In Situ* and *Operando* Characterization of Photoelectrochemical Assemblies), Laboratory Directed Research and Development Program of Lawrence Berkeley National Laboratory, U.S. Department of Energy, DE-AC02-05CH11231 ($223k/year, PI) |
| 2015 | BaCaTec Project Award: Energetics and charge carrier transport at the surfaces of inhomogeneous polycrystalline thin films for water splitting (Co-Pi, $6k/six months) |
| 2013-2015 | "Investigation of halide perovskites for efficient light harvesting" JCAP New Materials Program ($210k/yr, 2 yrs, Co-Pi) |

## Awards and Scholarships

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| 2018 | "Celebrating excellence in research: 100 women of Materials Science" from Royal Society of Chemistry |
| 2016 | "Alfredo di Braccio Award" to young scientists from the Italian Science Academy (Accademia dei Lincei) |
| 2014 | Finalist ISSNAF Young Investigator Award - Physics, Astrophysics, Chemistry, Mathematics |
| 2014 | Honorary member of the Golden Key International Honour Society (University of California, Berkeley) |
| 2013 | Mention for Sapio Award for Italian Research |
| 2011/2012 | Marie Curie Fellowship |
| 2010 | NanoBio Conference Scholarship |
| 2010 | International Center for Materials Research Scholarship (University of California Santa Barbara) |
| 2009 | European Science Foundation Scholarship |
| 2009 | Italian Society of Pure and Applied Biophysics Scholarship |
| 2008 | Italian Chemical Society Scholarship |
| 2007 | National Institute for Science and Materials Technology Scholarship |
| 2001/2002 | EU and Italian Undergraduate Fellowship |

## Teaching Experience

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| 2017 | Guest Lecturer in MSE 242 (Advanced Characterization Techniques), Materials Science and Engineering Department, UC Berkeley |

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| Sept 2015 – Dec 2015 | Organic Chemistry Lecturer, Department of Chemistry and Biochemistry, California State East Bay, Hayward |
| 2012 | Guest Lecturer in Chem 394 (Advanced Topics in Chemistry: Nanotechnology), Loyola Marymount University, Los Angeles |
| Oct 2011 – Oct 2012 | Adjunct Professor of "Phyto-pharmaceutical laboratory methods" for Academic Year 2010/2011, Faculty of Pharmacy, University of Trieste |

## Professional Services and Leadership:

*Community and Outreach*

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| 2018 – 2019 | Chair of the Molecular Foundry Executive User Committee |
| 2018 – Present | Committee Member of the OSA Optics for Energy Executive Committee – Events Co-Chair |
| 2018 – Present | TechWomen Professional Mentor |
| 2018 | Participation to Congressional Visits as representative of Society for Science at User Research Facilities (SSURF) |
| 2017—Present | Member and secretary of the User Executive Committee at the Advanced Light Source |
| 2017—Present | Member of the Diversity, Equity, and Inclusion Committee at the Molecular Foundry |
| 2016 – Present | U.S. Department of Energy (DOE) proposal review |
| 2015 – Present | NSF Panelist |
| 2015 – Present | The Molecular Foundry's proposal review board |
| 2015 – Present | Cyclotron Road's proposal review board |
| 2014 – Present | Tutor of Italian engineering visiting students in the ISSNAF-CNI program |
| 2012 | Volunteer for outreach education at UC Santa Barbara, Material Research Laboratory |
| 2011 | SISSA Medialab editorial project to realize a Science book targeted to Italian junior high school students |

*Institutional Service (LBNL)*

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| 2018—Present | Chair of the Diversity, Equity, and Inclusion Committee of the Chemical Sciences Division |
| 2018—Present | Chemical Sciences Division Representative on the Women in Science and Engineering Council (WSEC) |
| 2018 – Present | Volunteer for Workforce Development and Education |
| 2018 | Career Research Scientist Search Committee Chair (Chemical Sciences Division and Advanced Light Source) |
| 2018 | Career Track Staff Scientist Search Committee Member (Molecular Foundry) |
| 2018 | Molecular Foundry Director Search Committee Member |
| 2017—Present | Member of the Women in Science and Engineering Council |
| 2016 – Present | Member and treasurer of the User Executive Committee at the Molecular Foundry |
| 2015 | Program Manager Search Committee Member (Chemical Sciences Division) |
| 2015 | Career Track Staff Scientist Search Committee Member (Chemical Sciences Division) |
| 2014 – 2015 | Member of the Materials Science Division Executive Safety Committee |

*Conference and Symposia Organization*

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| 2018 – Present | Electronic Materials Symposium organizing committee |
| 2018 | Organizer at the Molecular Foundry User Meeting as the Chair of the User Executive Committee at the Molecular Foundry |
| 2017 | Workshop Organizer at the Molecular Foundry User Meeting: Biohybrid Materials for Energy Transduction – complete list of organizers: Francesca Maria Toma, Adam Schwartzberg, Carolin Ajo-Franklin, Jeff Urban (LBNL) |
| 2017 | Chair of the 2017 Advanced Light Source User Meeting (Chairs: Francesca Maria Toma and Monika Blum) |
| 2017 | 21st International Conference on Solid State Ionics Symposium Organizer: I-17 – Photochemical and photocatalytic energy conversion (complete list of organizers: Ian D. Sharp and Francesca M. Toma, LBNL) |
| 2017 | Spring MRS 2017 Symposium Organizer: (Photo)electrocatalytic materials and integrated assemblies for solar fuels production: Discovery, Characterization, and Performance. Symposium ES7 (complete list of |

organizers: Francesca M. Toma (LBNL), Roel Van de Krol (Helmholtz-Zentrum Berlin), Lianzhou Wang (University of Queensland), Akihiko Kudo (Tokyo University of Science)

2016 XVI IMRC Symposium Organizer: Solar Fuels/Aritifcial Photosynthesis: Materials and Devices (complete list of organizers: Hector A. Calderon (ESFM-IPN), Francesca M. Toma (LBNL), Chengxiang Xiang (JCAP-Caltech)

2016 Organizer of the Molecular Foundry User Meeting as a Member of the User Executive Committee at the Molecular Foundry

2016 Workshop Organizer at the Molecular Foundry User Meeting: Tackling Challenges of Imaging Functionality – complete list of organizers: Peter Ercius, Francesca Maria Toma, Alexander Weber-Bargioni (LBNL)

2014 Workshop Organizer: Tackling Grand Challenges of Energy Storage and Conversion Materials, a workshop of 2014 Advanced Light Source User Meeting – complete list of organizers: Wanli Yang (LBNL), Francesca M. Toma (LBNL), Jonathan Lee (LLNL), Michael Bagge-Hansen (LLNL), Jinghua Guo (LBNL), Ethan Crumlin (LBNL), Zahid Hussain (LBNL), Suntharampillai Thevuthasan (PNNL), Junko Yano (LBNL), Christian Kisielowski (LBNL)

*Editorial Activity*

2018 – Present Editorial Board of Progress in Materials Science, Elsevier

2015 – Present Hydrogen Storage and Production, Frontiers

## Graduate and Postdoctoral Advisees

| First Name | Last Name | Relationship | Co-Advisor | Current Affiliation | Year |
|---|---|---|---|---|---|
| Aya | Buckley | Graduate Student | Dean Toste | UCB | 2015-Present |
| Guiji | Liu | Postdoc | | LBNL | 2016-Present |
| Johanna | Eichhorn | Postdoc | | LBNL | 2015-Present |
| Guosong | Zeng | Postdoc | | LBNL | 2018-Present |
| Ashley | Cronk | Undergrad Student | David Larson | UCB | 2017-Present |
| Marcella | Kartono | Undergrad Student | | UCB | 2018-Present |
| Zitao | Tang | Undergrad Student | | UCB | 2018-Present |
| Sean | Utan | Undergrad Student | | UCB | 2018-Present |
| Patrick | Yorkgitis | Undergrad Student | | UCB | 2018-Present |
| Gregory | Zaborski | Undergrad Student | | UCB | 2017-Present |
| Ben | Zhu | Undergrad Student | | UCB | 2018-Present |
| Wenlong | Fu | Visiting Student | CSC Fellow | XJTU | 2018-Present |
| Michelle | Lee | Visiting Student | Christopher Ober | Cornell | 2018-Present |
| Umberto | Savino | Visiting Student | Angelica Chiodoni | IIT | 2018-Present |
| Chansol | Kim | Visiting Student | | KAIST | 2018-Present |
| Jinkyu | Lim | Visiting Student | Hyunjoo Lee | KAIST | 2017-Present |
| Roman | Kazantsev | Postdoc | Dean Toste | Lam Research | 2016-2017 |
| Paul William | Ward Burroughs | Undergrad Student | | UCB | |
| Austin | Li | Undergrad Student | | UCB | 2016-2017 |
| Nicola | Cefarin | Visiting Student | Massimo Tormen | Elettra Synchrotron | 2016 |
| Ashley | Gaulding | Postdoc | Ian Sharp | NREL | 2015-2016 |
| Alberto | De Riccardis | Visiting Student | Giuseppe Mele | Sanofi, Italy | 2016 |
| Matthew | Snedaker | Postdoc | | Lam Research | 2016 |
| Laura | Löbbert | Visiting Student | Thomas Bein | LMU | 2016 |
| Christine | Abelyan | Undergrad Student | | Uber | 2016 |
| Marvin | Lee | Undergrad Student | | Undergound Solutions | 2014-2015 |
| Yanbo | Li | Postdoc | Ian Sharp | UESTC, China | 2014-2015 |
| Viktoria | Kunzelmann | Visiting Student | Martin Stuzmann | TUM | 2015 |
| Maria Chiara | Simonelli | Visiting Student | Alberto Rainer | Abbott | 2015 |
| Benedetta | Flebus | Undergrad Student | Loredana Casalis | UCLA | 2010 |
| Lena | Hoober-Burkhardt | Visiting Student | Giacinto Scoles | UMKC | 2010 |

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| Antonio | Turco | Graduate Student | Maurizio Prato | University of Salento | 2010-2011 |
| Festus | Okoye | Visiting Student | Giacinto Scoles | Nnamdi Azikiwe University, Nigeria | 2009 |
| Vikas | Kshirsagar | Visiting Student | Giacinto Scoles | SABIC, India | 2009 |

## Invited talks at Conferences, Universities and Research Centers

More than 20 invited and plenary talks at International Conferences, Universities and Research Centers

**23.** "Understanding Chemical Transformations at Functional Interfaces for Solar Fuels Generation", Schottky-seminar, Walter Schottky Institute, Technical University of Munich (October 30th, 2018, Munich, Germany)

**22.** "A New Portrait of Functional Complex Interfaces", plenary talk at NanoGe2018 (24th October, 2018, Malaga, Spain)

**21.** "A New Portrait of Functional Complex Interfaces", invited talk at Elettra Synchrotron (June 15th, 2018, Trieste, Italy)

**20.** "A New Portrait of Functional Complex Interfaces", invited talk at Physics and Chemistry of Biological Systems Alumni Symposium, at SISSA (June 13th, 2018, Trieste, Italy)

**19.** "Integrated Photoelectrodes for $CO_2$ reduction and water oxidation", invited seminar, The Glenn T. Seaborg Center, Chemical Sciences Division, LBNL (December 6th, 2017, Berkeley, CA)

**18.** "Integrated Photoelectrodes for $CO_2$ Reduction", invited talk, Symposium ES2: On the Way to Sustainable Solar Fuels—New Concepts, Materials and System Integration, 2017 MRS Fall (November 28th, 2017, Boston, MA, USA)

**17.** "Towards *in situ* and *operando* characterization of photoelectrochemical assemblies", invited talk, ALS 2017 User Meeting Workshop, Frontiers and In Situ Soft X-ray Spectroscopy, Lawrence Berkeley National Lab (October 4th, 2017, Berkeley, CA)

**16.** "Mechanistic Insights into Chemical and Photochemical Transformations of Bismuth Vanadate Photoanodes", invited talk, Symposium EC4: Material, Devices and Systems for Sustainable Conversion of Solar Energy to Fuels, 2016 MRS Fall (December 1st, 2016, Boston, MA, USA)

**15.** "Viable Artificial Photosynthetic Devices: the Synthesis and Advanced Characterization Nexus", The Molecular Foundry (November 23rd, 2016)

**14.** "Towards viable Artificial Photosynthetic Devices", invited talk, Elettra Synchrotron, (January 21st, 2016, Trieste, Italy)

**13.** "Towards viable Artificial Photosynthetic Devices", invited talk, Workshop: "From Intermolecular Forces to Frontiers in Nanoscience and Nanomedicine", International Center for Theoretical Physics, (January 21st, 2016, Trieste, Italy)

**12.** "Synthesis and Characterization of Novel Materials for Renewable Energy and Optoelectronic Applications", invited talk at the Physics Department of Technical University of Munich (December 10th, 2015, Munich, Germany)

**11.** "Towards viable artificial photosynthetic devices", Schottky-seminar, Walter Schottky Institute, Technical University of Munich (December 8th, 2015, Munich, Germany)

**10.** "Addressing challenges with incorporation of lower band gap oxides in water splitting devices", invited seminar, Materials Science and Engineering Department, Stanford University (18th November 2015, Stanford, CA, USA)

**9.** "Addressing challenges with incorporation of lower band gap oxides in water splitting devices", invited SOFI Solar Fuel Institute talk, available online (recorded on 29th September 2015, Berkeley, CA, USA)

**8.** "Uniform perovskite layers for low hysteresis planar heterojunction solar cells", plenary talk at the Molecular Foundry User Meeting 2015 (August 20th, 2015, Berkeley, CA, USA)

**7.** "Towards viable artificial photosynthetic devices", plenary talk at the SIFB2015 Italian Society for PhotoBiology Congress (June 11th, 2015, Bari, Italy)

**6.** "Addressing challenges with incorporation of lower band gap oxides in water splitting devices", invited talk given at International Materials Research Conference (August 18th, 2014, IMRC XIV, Cancun, Mexico)

**5.** "Paving the road for highly efficient water oxidation catalysis", invited seminar given at the Joint Center for Artificial Photosynthesis (March 28th, 2013, JCAP, LBNL, Berkeley, CA, USA)

**4.** "The alluring potential of functionalized CNTs: from regenerative medicine to renewable energy", invited seminar, The Molecular Foundry (May 7th, 2012, LBNL, Berkeley, CA, USA)

**3.** "Functionalization of carbon nanostructures for efficient water oxidation", SAXS miniworkshop organized by the Institute of Biophysics and Nanosystems Research, at Elettra Synchrotron (December 14th, 2010, Trieste, Italy)

**2.** "Functionalization of carbon nanostructures for efficient water oxidation" at the conference "Energy materials: electro- and photo-Chemical Interfaces and devices" at Chemistry Department of University College of London,

organized by The Thomas Young Center, London Centre for Theory and Simulation of Materials (September 9th, 2010, London, UK)

**1.** "Covalent Functionalization of Carbon Nanotubes and their applications: from efficient drug (siRNA) delivery to catalytic water splitting", invited seminar at the Department of Biology in Temple University, (August 6th, 2010, Philadelphia, PA, USA)

## Expert Opinions (* = corresponding author; ‡ = first author)

*‡**2.** **F. M. Toma**,* News and Views: "Disentangling interfacial energetics" *Nat. Energy* **2018**, 3, pp 6-7 [DOI]

*‡**1.** **F. M. Toma**,* A. Kudo,* R. Van de Krol,* L. Z. Wang,* "Addressing the Key Aspects of Photoelectrocatalytic Systems for Solar Fuel Production" ACS Energy Lett 2017, 2(12), pp. 2725-2726 [DOI]

## Book Chapters (* = corresponding author; ‡ = first author)

***3.** J. Eichhorn, G. Liu, **F. M. Toma**,* "Degradation of Semiconductor Electrodes in Photoelectrochemical Devices: Principles and Case Studies", in "Integrated Solar Fuel Generators; Energy and Environment Series", edited by I. D. Sharp, H. A. Lewerenz, H. A. Atwater, Royal Society of Chemistry, ISBN 978-1-78262-555-1

**2.** A. Fabbro, **F. M. Toma**, G. Cellot, M. Prato, L. Ballerini "Carbon nanotubes and neuronal performance", in "Nano medicine and the nervous system", edited by C. R. Martin**,** V. R. Preedy**,** R. J. Hunter, Science Publishers (U.S.), ISBN-10: 1578087287

**‡1.** C. Fabbro,‡ **F. M. Toma**,‡ and T. Da Ros "Biomedical Applications II: Influence of Carbon Nanotubes in Cancer Therapy", Chapter 3, pp 47-86, in "Carbon Nanotubes: from bench Chemistry to promising Biomedical Applications", edited by G. Pastorin, Pan Stanford Publishing (*these authors contributed equally to this work), ISBN 978-981-4241-68-7 (Hardcover)

## Peer-reviewed Publications (* = corresponding author; ‡ = first author)

As of October 2018, Dr. Francesca Maria Toma has co-authored 68 peer-reviewed publications, with an h-index of ~32 and a total citation of ~2500 (without self-citation, source Web of Science™).

***68.** G. Liu, J. Eichhorn, C.-M. Jiang, M. C. Scott, L. H. Hess, J. M. Gregoire, J. A. Haber, I. D. Sharp, **F. M. Toma**,* "Interface engineering for light-driven water oxidation: Unravelling the passivating and catalytic mechanism in $BiVO_4$ overlayers", Suistainable Energy and Fuels **2010**, 3, 127-135 [DOI]

***67.** J. Eichhorn, C. Kastl, A. M. Schwartzberg, I. D. Sharp, **F. M. Toma**,* "Disentangling the role of surface chemical interactions on interfacial charge transport at $BiVO_4$ photoanodes", *ACS Appl. Mater. Interfaces* **2018**, 10 (41), pp 35129-35135 [DOI]

**66.** L. Zhou, A. Shinde, D. Guevarra, **F. M. Toma**, H. S. Stein, J. M. Gregoire, J. A. Haber, "Balancing surface passivation and catalysis with integrated $BiVO_4$/(Fe-Ce)$O_x$ photoanodes in pH 9 borate electrolyte", *ACS Appl. Energy Mater.* **2018**, 1 (10), pp 5766-5771 [DOI]

**65.** M. R. Nellist, J. Qiu, F. A. L. Laskowski, **F. M. Toma**, S. W. Boettcher, "Potential-Sensing Electrochemical AFM Shows CoPi as a Hole Collector and Oxygen Evolution Catalyst on $BiVO_4$ Water-Splitting Photoanodes", *ACS Energy Lett.* **2018**, 3 (9), pp 2286-2291 [DOI]

***64.** J. Eichhorn, C. Kastl, J. K. Cooper, D. Ziegler, A. M. Schwartzberg, I. D. Sharp, **F. M. Toma**,* "Nanoscale imaging of charge carrier transport limitations in $BiVO_4$ photoanodes", *Nat. Commun.* **2018**, 9, 2597. Featured in Nature Communications Editors' Highlights, and *News Release* [DOI]

**63.** C. M. Sutter-Fella, Q. P. Ngo, N. Cefarin, K. L. Gardner, N. Tamura, C. V. Stan, W. S. Drisdell, A. Javey, **F. M. Toma**, I. D. Sharp, "Cation-Dependent Light-Induced Halide Demixing in Hybrid Organic-Inorganic Perovskites", *Nanolett.* **2018**, 18 (6), pp 3473-3480 [DOI]

**62.** C.-M. Jiang, G. Segev, L. H. Hess, G. Liu, G. Zaborski, **F. M. Toma**, J. K. Cooper, I. D. Sharp, "Composition-Dependent Functionality of Copper Vanadate Photoanodes", *ACS Appl. Mater. Interfaces* **2018**, 10 (13), pp 10627-10633 [DOI]

**61.** G. Segev, C.-M. Jiang, J. K. Cooper, J. Eichhorn, F. M. Toma, I. D. Sharp, "Quantification of the loss mechanisms in emerging water splitting photoanodes through empirical extraction of the spatial charge collection efficiency", *Energy Environ. Sci.* **2018**, 11, pp 904-913 [DOI]

***60.** C. M. Sutter-Fella,‡ Y. Li,‡ N. Cefarin, A. K. Buckley, Q. P. Ngo, A. Javey, I. D. Sharp,* **F. M. Toma**,* "Low Pressure Vapor-Assisted Solution Process for Tunable Band Gap Pinhole-free Methylammonium Lead Halide Perovskites Films ", *J. Vis. Exp.* **2017**, 127, e55404. ‡These authors contributed equally (Impact Factor 1.232) [DOI]

**59.** M. Favaro, J. Yang, S. Nappini, E. Magnano, **F. M. Toma**, E. J. Crumlin, J. Yano, and I. D. Sharp, "Understanding the oxygen evolution reaction mechanism on CoOx using operando ambient pressure X-ray photoelectron spectroscopy", *J. Am. Chem. Soc.* **2017**, 139 (26), pp 8960-8970 (Impact Factor 14.357) [DOI]

***58.** W. S. Drisdell,* L. Leppert, C. M. Sutter-Fella, Y. Liang, Y. Li, Q. P. Ngo, S. Gul, T. Kroll, D. Sokaras, A. Javey, J. Yano, J. B. Neaton, **F. M. Toma**,* D. Prendergast,* I. D. Sharp,* "Determining atomic-scale structure and composition of organo-lead halide perovskites by combining high-resolution X-ray absorption spectroscopy and first-principles calculations", *ACS Energy Lett.* **2017**, 2 (5), pp 1183-1189 (Impact Factor 12.227) [DOI]

***57.** E. A. Gaulding, G. Liu, C. T. Chen, L. Löbbert, A. Li, G. Segev, J. Eichhorn, S. Aloni, A. M. Schwartzberg, I. D. Sharp, **F. M. Toma**,* "Fabrication and optical characterization of polystyrene opal templates for the synthesis of scalable, nanoporous (photo)electrocatalytic materials by electrodeposition", *J. Mater. Chem. A* **2017**, 5, pp 11601-11614. *Inside front cover* (Impact Factor 9.931) [DOI]

**56.** C. M. Sutter-Fella, D. W. Miller, Q. P. Ngo, E. T. Roe, **F. M. Toma**, I. D. Sharp, M. C. Lonergan, A. Javey, "Band Tailing and Deep Defect States in $CH_3NH_3Pb(I_{1-x}Br_x)_3$ Perovskites as Revealed by Sub-Bandgap Photocurrent", *ACS Energy Lett.* **2017**, 2 (3), pp 709-715 (Impact Factor 12.227) [DOI]

**55.** M. Favaro, C. Valero-Vidal, J. Eichhorn, **F. M. Toma**, P. N. Ross, J. Yano, Z. Liu, E. J. Crumlin, "Elucidating the Alkaline Oxygen Evolution Reaction Mechanism on Platinum", *J. Mater. Chem. A* **2017**, 5, pp 11634-11643 (Impact Factor 9.931) [DOI]

**54** 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 Lett.* **2017**, 2, pp 139-150 (Impact Factor 12.227) [DOI]

**53** J. Yang, J. K. Cooper, **F. M. Toma**, M. Favaro, J. W. Beeman, K. Walczak, C. Wang, C. Zhu, S. Gul, J. Yano, C. Kisielowski, A. Schwartzberg, I. D. Sharp, "A multi-functional biphasic water splitting catalyst tailored for integration with high performance semiconductor photoanodes", *Nature Mater.* **2017**, 16, pp 335-341 *News Release* (Impact Factor 39.235) [DOI]

**52** A. Shinde, G. Li, L. Zhou, D. Guevarra, S. K. Kumar, **F. M. Toma**, J. A. Haber, Q. Yan, J. B. Neaton, J. M. Gregoire, "The role of the $CeO_2$/$BiVO_4$ interface in optimized Fe-Ce coatings for solar fuels photoanodes", *J. Mater. Chem. A* **2016**, 4, pp 14356-14363 (Impact Factor 8.867) [DOI]

***51** A. Shinde, D. Guevarra, G. Liu, I. D. Sharp, **F. M. Toma**,* J. M. Gregoire,* J. A. Haber,* "Discovery of Fe–Ce Oxide/$BiVO_4$ Photoanodes through Combinatorial Exploration of Ni–Fe–Co–Ce Oxide Coatings", *ACS Appl. Mater. Interface.* **2016**, 8, pp 23696-23705 (Impact Factor 7.504) [DOI]

***50** Y. Li, J. Cooper, W. Liu, C. Sutter-Fella, M. Amani, A. Javey, J. W. Ager, Y. Liu, **F. M. Toma**,* I. D. Sharp,* "Defective $TiO_2$ with high photoconductive gain for efficient and stable planar heterojunction perovskite solar cells", *Nat. Commun.* **2016**, 7, article number: 12446 (Impact Factor 12.124) [DOI]

**49** J. K. Cooper**,** S. Scott, Y. Ling, J. Yang, S. Hao, Y. Li, **F. M. Toma**, M. Stutzmann, K. V. Lakshmi, Sharp I. D. **"**The role of hydrogen in defining the n-type character of BiVO4 photoanodes", *Chem. Mater.* **2016**, 28(16), 5761-5771 (Impact Factor 9.466) [DOI]

***,‡48.** **F. M. Toma**,*,‡ J. K. Cooper, V. Kunzelmann, M. T. McDowell, Jie Yu, D. M. Larson N. J. Borys, C. Abelyan, J. W. Beeman, K. M. Yu, J. Yang, L. Chen, M. R. Shaner, J. Spurgeon, F. A. Houle, K. A. Persson, I. D. Sharp,* "Mechanistic Insights into Chemical and Photochemical Transformations of Bismuth Vanadate Photoanodes", *Nat. Commun.* **2016**, 7, article number: 12012 *News Release* (Impact Factor 12.124) [DOI]

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