Filippo Mangolini, Ph.D.

PERSONAL INFORMATION

Born in Desio, Milan, Italy
Date of Birth: October 17th, 1982
Nationality: Italian

CONTACT INFORMATION

Texas Materials Institute, Department of Mechanical Engineering
The University of Texas at Austin
204 E. Dean Keeton, Stop C2200
Austin, TX, 78712-1591, USA

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PROFESSIONAL & RESEARCH EXPERIENCE

Assistant Professor **01/2018 – present**
The University of Texas at Austin
Texas Materials Institute, Department of Mechanical Engineering

Marie Skłodowska-Curie IF Fellow **05/2016 – 11/2017**
University of Leeds, Leeds, UK
Institute of Functional Surfaces, School of Mechanical Engineering
Research project: *Nanotribochemical Investigation of Advanced Lubricants*

University Academic Fellow **10/2015 – 11/2017**
University of Leeds, Leeds, UK
Institute of Functional Surfaces, School of Mechanical Engineering

Marie Curie IOF Fellow **04/2013 – 09/2015**
- Phase II at Ecole Centrale de Lyon (Lyon, France), Laboratoire de Tribologie et Dynamique des Systèmes (Supervisor: Dr. J. Fontaine). **10/2014 – 09/2015**
- Phase I at University of Pennsylvania (Philadelphia, USA), Department of Materials Science and Engineering (Supervisor: Prof. R.W. Carpick). **04/2013 – 09/2014**

Research project: *In Situ Analytical Tribology for Investigating Advanced Carbon-Based Materials*

Postdoctoral Fellow **09/2012 – 03/2013**
University of Pennsylvania, Philadelphia, USA
Department of Materials Science and Engineering (Supervisor: Prof. R.W. Carpick)
Projects involved into:
1. *Assessment of a Novel Form of Amorphous Carbon as an Overcoat Material for Heat-Assisted Magnetic Recording.* Project funded by the Advanced Storage Technology Consortium (ASTC)
2. *Materials World Network: Mechanics and Durability of Diamond-like Nanocomposite (MaDDiLiN): An International Collaboration to Understand Tribo-Mechanical Multiphysical Phenomena.* Project funded by the National Science Foundation (NSF)

Swiss National Science Foundation Fellow **09/2011 – 08/2012**
University of Pennsylvania, Philadelphia, USA
Department of Materials Science and Engineering (Supervisor: Prof. R.W. Carpick)
Research project: *High Pressure X-Ray Photoelectron Spectroscopy (HPXPS) as a New Tool for Investigating the Tribochemistry of Advanced Carbon-Based Solid Lubricants*

Research assistant **08/2004 – 03/2005**
Polytechnic University of Milan, Milan, Italy
Applied Physics and Chemistry Laboratories of the Chemistry, Materials, and Chemical Engineering "G. Natta" Department (Prof. P.L. Cavallotti)
Projects involved into:
1. *Electrochemical Analysis of the Inhibitive Effect of Benzotriazole on the Corrosion of Zinc in Sodium Chloride Solutions*
2. *Electrodeposition of Mn-Pd Alloys*

EDUCATION

Ph.D. in Materials Science **09/2006 – 04/2011**
ETH Zurich, Zurich, Switzerland
Laboratory for Surface Science and Technology (LSST), Department of Materials
Supervisors: Prof. N.D. Spencer and Prof. A. Rossi
Thesis title: *Reactivity of Environmentally Compatible Lubricant Additives: an In Situ and Ex Situ Investigation*

Master's Degree in Materials Engineering **09/2004 – 07/2006**
Mark: 110/110 summa cum laude (100% with distinction, 1st class)
Polytechnic University of Milan, Milan, Italy
Thesis title: *Integrated Cooling for EUVL Collectors by Nickel Electroforming;* supervisors: Prof. P.L. Cavallotti and Prof. L. Magagnin

Bachelor's Degree in Materials Engineering **09/2001 – 07/2004**
Mark: 104/110
Polytechnic University of Milan, Milan, Italy
Thesis title: *Electrodeposition of Mn-Cu Alloys;* supervisors: Prof. P.L. Cavallotti and Prof. L. Magagnin

Scientific Diploma **2000-2001**
Mark: 99/100
Ballerini College, Seregno, Italy

TUTORIALS & COURSES

Attended **31** professional development workshops on surface-analytical techniques, tribology, project management, student education, diversity in higher education, publication of high-quality journal articles, and communicating research outcomes to a specialist and non-specialist audience.

Selected tutorials & courses:

- **National Effective Teaching Institute (NETI)** **08/2018**
  American Society for Engineering Education (ASEE), Philadelphia, USA
  Three-day workshop intended to give participants information and hands-on practice in elements of effective teaching
- **Write Winning Grant Proposal** **03/2018**
  Instructor: Dr. J. Robertson
  The University of Texas at Austin, Austin, USA
  Workshop aimed to provide assistant and associate professors with information necessary to prepare successful grant proposals for federal agencies
- **Engaging with the Media** **06/2016**
  University of Leeds, Leeds, UK
  Workshop intended to provide scientists and engineers with strategies and approaches to communicate research outcomes to a non-specialist audience
- **Increasing the Academic Impact of Your Research** **03/2016**
  University of Leeds, Leeds, UK
  Workshop intended to provide young faculties with strategies for increasing the scientific and technological impact of their research
- **Development Excellence and Innovation in Student Education** **12/2015**
  Center for Teaching and Learning, University of Leeds, Leeds, UK
  Workshop intended to expose participants to new pedagogical approaches as well as methodologies for developing new active learning strategies
- **Course in College Teaching** **01/2013 – 03/2013**
  Center for Teaching and Learning, University of Pennsylvania, Philadelphia, USA
  Ten-session seminar intended to prepare postdoctoral fellows nearing the job market to teach college courses and help them develop as instructors
- **Transitioning to Faculty Life: a Conference for Post-Docs** **05/2012**
  Ohio State University, Columbus, USA
  Workshop aimed to provide postdoctoral scholars with information necessary for a successful transition to a faculty position at research intensive institutions

- **Communicating across Cultures** **06/2009**
  Center for Teaching and Learning, ETH Zurich, Zurich, Switzerland
  Workshop intended to expose graduate students and postdoctoral scholars to the challenges of working in a multi-cultural environment
- **Presenting-Publishing-Communicating** **02/2008**
  Center for Teaching and Learning, ETH Zurich, Zurich, Switzerland
  Workshop intended to provide graduate students with background knowledge necessary for preparing high-quality scientific publications, giving talks at conferences, and communicating the outcomes of their research to a wider, non-specialist audience
- **Project Management for Research** **01/2008**
  Center for Teaching and Learning, ETH Zurich, Zurich, Switzerland
  In the workshop, graduate students and postdoctoral scholars experienced a range of project management methods and tools relevant for the management of their projects

TEACHING & SUPERVISING EXPERIENCE

The University of Texas at Austin **01/2018 – present**
Department of Mechanical Engineering
- Teaching *Advanced Methods for Surface Analysis* (ME 397), Spring 2020
- Teaching *Introduction to Phase Transformations* (ME 386P-1), Spring 2018, Spring 2019, Spring 2020
- Teaching *Materials Engineering* (ME 334), Fall 2018, Fall 2019

The University of Texas at Austin **01/2018 – present**
Department of Mechanical Engineering
- Supervising **3** Ph.D. students (Z. Li, J. Yan, R. Chrostowski)
- Supervising **1** master student (E. Naccarelli)
- Supervising **4** undergraduate students (N. Molina, J. Smith, R. Misage, L. Castelli)

University of Leeds **02/2016 – 11/2017**
School of Mechanical Engineering
- Supervising **1** postdoctoral researcher (P. Parsaeian)
- Supervising **3** Ph.D. students (A. Gaya, W. Al-Sallami, B. Thornley)
- Supervised **2** undergraduate students (M. Reed, F. Alawadhi)

University of Leeds **01/2016 – 05/2016**
School of Mechanical Engineering
Co-teaching the *Surface Engineering* module (MECH5410, 15 credits)

Ecole Centrale de Lyon, Lyon, France **10/2014 – 09/2015**
Laboratoire de Tribologie et Dynamique des Systèmes (Dr. J. Fontaine)
- Mentored **1** Ph.D. student (M.D. Koshigan)
- Supervised **1** master student (P. Boyer Chammad)

University of Pennsylvania, Philadelphia, USA **09/2011 – 09/2014**
Department of Mechanical Engineering and Applied Mechanics (Prof. R.W. Carpick)
- Mentored **3** Ph.D. students (J. Hilbert, J.B. McClimon, F. Streller)
- Supervised **1** visiting Ph.D. student (M.D. Koshigan)
- Supervised **1** master student (J. Xu)
- Supervised **1** undergraduate student (C. Wang)

University of Pennsylvania, Philadelphia, USA **02/2012 – 12/2013**
Department of Mechanical Engineering and Applied Mechanics
Guest lecturer for **3 semesters** in the course *Enhancing Sustainability through Tribology* (MEAM 504, Prof. Andrew Jackson)

ETH Zurich, Zurich, Switzerland **02/2012 – 06/2012**
Department of Materials
Teaching assistant for the course *Quantitative Surface Analysis* (Prof. A. Rossi)

ETH Zurich, Zurich, Switzerland **07/2007 – 07/2008**
Department of Materials
- Supervised **2** undergraduate students (N. Bjelobrk, V. Sessini)

ETH Zurich, Zurich, Switzerland **02/2007 – 06/2007**
Department of Materials
Teaching assistant in the course *Practical Chemistry Laboratory* (1st semester students)

PEER-REVIEWED JOURNAL ARTICLES *(h-index: 17, Total no. of citations: 1532, Google Scholar)*

Papers published or accepted in peer-reviewed journals

1. **F. Mangolini**, K.D. Koshigan, M.H. Van Benthem, J.A. Ohlhausen, J.B. McClimon, J. Hilbert, J. Fontaine, R.W. Carpick, *Effect of Hydrogen and Oxygen Partial Pressure on the Tribochemistry of Silicon Oxide-Doped Hydrogenated Amorphous Carbon*, submitted, 2019
2. M. Walter, **F. Mangolini**, J.B. McClimon, R.W. Carpick, M. Moseler, *Origin of carbon 1s binding energy variance in diamond*, submitted, 2019 (arXiv:1902.02958)
3. J.B. McClimon, A.C. Lang, Z. Milne, N. Garabedian, A.C. Moore, J. Hilbert, **F. Mangolini**, J.R. Lukes, D.L. Burris, M.L. Taheri, J. Fontaine, R.W. Carpick, *Investigation of the Mechanics, Composition, and Functional Behavior of Thick Tribofilms Formed from Silicon- and Oxygen-Containing Hydrogenated Amorphous Carbon*, **Tribology Letters**, 67, 48, 2019
4. **F. Mangolini**, J.B. McClimon, J. Segersten, J. Hilbert, P. Heaney, J.R. Lukes, R.W. Carpick, *Silicon Oxide-Rich Diamond-Like Carbon: A Conformal, Ultrasmooth Thin Film Material With High Thermo-Oxidative Stability*, **Advanced Materials Interfaces**, 6 (2), 1801416, 2019
5. **F. Mangolini**, J. Hilbert, J.B. McClimon, J.R. Lukes, R.W. Carpick, *Thermally Induced Structural Evolution of Silicon- and Oxygen-Containing Hydrogenated Amorphous Carbon: a Combined Spectroscopic and Molecular Dynamics Simulation Investigation*, **Langmuir**, 34 (9), 2989-2985, 2018
6. J. Hilbert, **F. Mangolini**, J.B. McClimon, J.R. Lukes, R.W. Carpick, *Si Doping Enhances the Thermal Stability of Diamond-Like Carbon Through Reductions in Carbon-Carbon Bond Length Disorder*, **Carbon**, 131, 72-78, 2018
7. **F. Mangolini**, B.A. Krick, T.D.B. Jacobs, S. Khanal, F. Streller, J.B. McClimon, J. Hilbert, S.V. Prasad, T.W. Scharf, J.A. Ohlhausen, J.R. Lukes, W.G, Sawyer, R.W. Carpick, *Effect of Silicon and Oxygen Dopants on the Stability of Hydrogenated Amorphous Carbon under Harsh Environmental Conditions*, **Carbon**, 130, 127-136, 2018
8. F. Streller, Y. Qi, J. Yang, **F. Mangolini**, A.M. Rappe, R.W. Carpick, *Valence Band Control of Metal Silicide Films Via Stoichiometry*, **The Journal of Physical Chemistry Letters**, 7, 2573-2578, 2016
9. J. Peng, A. Sergiienko, **F. Mangolini**, P.E. Stallworth, S. Greenbaum, R.W. Carpick, *Solid State Magnetic Resonance Investigation of the Thermally-Induced Structural Evolution of Silicon Oxide-Doped Hydrogenated Amorphous Carbon*, **Carbon**, 105, 163-175, 2016
10. **F. Mangolini**, J.B. McClimon, R.W. Carpick, *Quantitative Evaluation of the Carbon Hybridization State by Near Edge X-Ray Absorption Fine Structure Spectroscopy*, **Analytical Chemistry**, 88 (5), 2817-2824, 2016
11. F. Streller, R. Agarwal, **F. Mangolini**, R.W. Carpick, *Novel Metal Silicide Thin Films by Design via Controlled Solid-State Diffusion*, **Chemistry of Materials**, 27 (12), 4247-4253, 2015
12. K.D. Koshigan†, **F. Mangolini**†, J.B. McClimon, B. Vacher, S. Bec, R.W. Carpick, J. Fontaine, *Understanding the Hydrogen and Oxygen Gas Pressure Dependence of the Tribological Properties of Silicon Oxide-Doped Hydrogenated Amorphous Carbon Coatings*, **Carbon**, 93 (C), 851-860, 2015 († co-first author)
    Press releases:
    1. W.T. Tysoe, N.D. Spencer, *In fact, it's the gas!*, Tribology and Lubrication Technology, October 2015
13. N.N. Gosvami, J.A. Bares, **F. Mangolini**, A.R. Konicek, D.G. Yablon, R.W. Carpick, *Mechanisms of Antiwear Tribofilm Growth Revealed In Situ by Single-Asperity Sliding Contacts*, **Science**, 348 (6230), 102-106, 2015
    Press releases:
    1. http://www.sciencemag.org/content/348/6230/40.summary
    2. http://www.upenn.edu/pennnews/news/penn-and-exxonmobil-researchers-address-long-standing-mysteries-behind-anti-wear-motor-oil-addi
    3. http://phys.org/news/2015-03-long-standing-mysteries-anti-wear-motor-oil.html
    4. http://www.cemag.us/news/2015/03/nanoscale-mysteries-behind-anti-wear-motor-oil-additive
    5. http://www.eurekalert.org/pub_releases/2015-03/uop-pae031315.php
    6. W.T. Tysoe, N.D. Spencer, *Reaction to Rubbing*, Tribology and Lubrication Technology, August 2015
    7. http://www.sciencedaily.com/releases/2015/03/150313130937.htm
14. H. Feng, A.R. Konicek, N. Moldovan, **F. Mangolini**, T.D.B. Jacobs, I. Wylie, P.U. Arumugam, S. Siddiqui, R.W. Carpick, J.A. Carlisle, *Boron-Doped Ultrananocrystalline Diamond Synthesized with an H-Rich/Ar-Lean Gas System*, **Carbon**, 84, 103-117, 2015
15. **F. Mangolini**, J.B. McClimon, F. Rose, R.W. Carpick, *Accounting for Nanometer-Thick Adventitious Carbon Contamination in X-Ray Absorption Spectra of Carbon-Based Materials*, **Analytical Chemistry**, 86 (24), 12258-12265, 2014

16. F. Rose, N. Wang, R. Smith, Q-F. Xiao, H. Inaba, T. Mastumura, H. Matsumoto, Q. Dai, B. Marchon, **F. Mangolini**, R.W. Carpick, *Complete Characterization by Raman Spectroscopy of the Structural Properties of Thin Hydrogenated Diamond-Like Carbon Films Exposed to Rapid Thermal Annealing*, **Journal of Applied Physics**, 116 (12), 123516, 2014
17. F. Streller, G.E. Wabiszewski, **F. Mangolini**, G. Feng, R.W. Carpick, *Tunable, Source-Controlled Formation of Platinum Silicides and Nanogaps from Thin Precursor Films***, Advanced Materials Interfaces**, 1 (3), 1300120, 2014
18. **F. Mangolini**, F. Rose, J. Hilbert, R.W. Carpick, *Thermally Induced Evolution of Hydrogenated Amorphous Carbon*, **Applied Physics Letters**, 103 (16), 161605, 2013
19. **F. Mangolini**, J. Åhlund, G.E. Wabiszewski, V.P. Adiga, P. Egberts, F. Streller, K. Backlund, P.G. Karlsson, B. Wannberg, R.W. Carpick, *Angle-Resolved Environmental X-Ray Photoelectron Spectroscopy: A New Laboratory Setup for Photoemission Studies at Pressures Up To 0.4 Torr*, **Review of Scientific Instruments**, 83 (9), 093112, 2012
20. T.R. Gordon, M. Cargnello, T. Paik, **F. Mangolini**, R.T. Weber, P. Fornasiero, C.B. Murray, *Nonaqueous Synthesis of TiO_2 Nanocrystals Using TiF_4 to Engineer Morphology, Oxygen Vacancy Concentration, and Photocatalytic Activity*, **Journal of the American Chemical Society**, 134 (15), 6751-6761, 2012
21. M. Crobu, A. Rossi, **F. Mangolini**, N.D. Spencer, *Chain-Length-Identification Strategy in Zinc Polyphosphate Glasses by means of XPS and ToF-SIMS*, **Analytical and Bioanalytical Chemistry**, 403 (5), 1415-1432, 2012
22. **F. Mangolini**, A. Rossi, N.D. Spencer, *Tribochemistry of Triphenyl Phosphorothionate (TPPT) by In Situ Attenuated Total Reflection (ATR/FT-IR) Tribometry*, **Journal of Physical Chemistry C**, 116 (9), 5614-5627, 2012
23. **F. Mangolini**, A. Rossi, N.D. Spencer, *In Situ Attenuated Total Reflection (ATR/FT-IR) Tribometry: a Powerful Tool for Investigating Tribochemistry at the Lubricant-Substrate Interface*, **Tribology Letters**, 45 (1), 207-218, 2012
24. **F. Mangolini**, A. Rossi, N.D. Spencer, *Influence of Metallic and Oxidized Iron/steel on the Reactivity of Triphenyl Phosphorothionate in Oil Solution*, **Tribology International**, 44 (6) (special issue on Advances in Boundary Lubrication and Boundary Surface Films), 670-683, 2011
25. **F. Mangolini**, A. Rossi, N.D. Spencer, *Chemical Reactivity of Triphenyl Phosphorothionate (TPPT) with Iron: an ATR/FT-IR and XPS Investigation*, **Journal of Physical Chemistry C**, 115 (4) (part of the "Alfons Baiker Festschrift"), 1339-1354, 2011
26. **F. Mangolini**, A. Rossi, N.D. Spencer, *Substituent effect on the Reactivity of Alkylated Triphenyl Phosphorothionates in Oil Solution*, **Tribology Letters**, 40 (3), 375-394, 2010
27. M. Crobu, A. Rossi, **F. Mangolini** and N.D. Spencer, *Tribochemistry of Bulk Zinc Metaphosphate Glasses*, **Tribology Letters**, 39 (2), 121-134, 2010
28. **F. Mangolini**, A. Rossi, N.D. Spencer, *Reactivity of Triphenyl Phosphorothionate in Oil Solution*, **Tribology Letters**, 35 (1), 32-43, 2009
29. **F. Mangolini**, L. Magagnin, P.L. Cavallotti, *Pulse Plating of Mn–Cu Alloys from a Sulfate Bath*, **Transactions of the Institute of Metal Finishing**, 85 (1), 2007
30. **F. Mangolini**, L. Magagnin, P.L. Cavallotti, *Pulse Plating of Mn–Cu alloys on steel*, **Journal of the Electrochemical Society**, 153 (9), C623–C628, 2006
31. **F. Mangolini**, L. Magagnin, P.L. Cavallotti, *Elettrodeposizione di leghe Mn–Cu per la protezione catodica degli acciai/Electrodeposition of sacrificial Mn–Cu alloys on steel*, **Galvanotecnica e nuove finiture**, 5, 278–283, 2004

Manuscripts submitted or in preparation

32. **F. Mangolini**, T.D.B. Jacobs, B.A. Krick, A. Pitenis, *In situ Analytical Approaches in Tribology: Past, Present, and Future*, in preparation, 2019 (review paper)
33. M. Walter, **F. Mangolini**, R.W. Carpick, M. Moseler, *Origin of carbon 1s binding energy shifts in amorphous carbon materials*, in preparation, 2019
34. **F. Mangolini**, T.D.B. Jacobs, F. Streller, J.B. McClimon, J. Hilbert, J.R. Lukes, R.W. Carpick, *Origin of the Superior Thermo-Oxidative Stability of Silicon Oxide-Doped Hydrogenated Amorphous Carbon*, in preparation, 2019

BOOK CHAPTERS

1. **F. Mangolini**, J.B. McClimon, *Near Edge X-Ray Absorption Fine Structure Spectroscopy: a Powerful Tool for Investigating the Surface Structure and Chemistry of Tribological Materials*, in M. Dienwiebel and M.I. De Barros-Bouchet, Eds., *Advanced Analytical Methods in Modern Tribology*, Springer, Berlin, Germany. December 2018
2. **F. Mangolini**, A. Rossi, *Attenuated Total Reflection-Fourier Transform Infrared Spectroscopy: a Powerful Tool for Investigating Polymer Surfaces and Interfaces*, in L. Sabbatini, Ed., *Polymer Surface Characterization*, De Gruyter, Berlin, Germany. July 2014

CONFERENCE PROCEEDINGS

1. R.W. Carpick, **F. Mangolini**, J. Hilbert, J.R. Lukes, *Thermo-Oxidative Stability of SiO_x-doped Diamondlike Carbon Studied Via Environmental XPS and AFM*, Microscopy and Microanalysis, 20 (S3), 2092-2093, 2013
2. **F. Mangolini**, J. Hilbert, J.R. Lukes, R.W. Carpick, *Assessment of the Thermo-Oxidative Stability of Silicon Oxide-Doped Diamond-Like Carbon by In Situ Environmental X-Ray Photoelectron Spectroscopy*, Proceedings World Tribology Congress V, Turin, Italy. September 2013
3. **F. Mangolini**, A. Rossi, N.D. Spencer, *Mechanical Stability of Thermal Films Formed on Bearing Steel in the Presence of Environmentally Friendly Additives: an XPS Analytical Study*, Proceedings World Tribology Congress IV, Kyoto, Japan. September 2009

NON-REFEREED ARTICLES

1. **F. Mangolini**, J.B. McClimon, R.W. Carpick, *Determinazione Quantitativa dello Stato di Ibridizzazione del Carbonio tramite Spettroscopia di Assorbimento di Raggi X*, La Chimica e L'Industria, December 2016
2. J. Åhlund, **F. Mangolini**, R.W. Carpick, *XPS on Carbon Films*, VG Scienta, Application Note
3. J. Hilbert, **F. Mangolini**, J.R. Lukes, R.W. Carpick, *Experimental and Simulation-Based Investigation of the Thermal Stability of Silicon Oxide-Doped Diamond-Like Carbon*, Tribology and Lubrication Technology, March 2014
4. J. Åhlund, **F. Mangolini**, R.W. Carpick, *AR-XPS at Environmental Conditions*, VG Scienta, Application Note

PATENTS

R.W. Carpick, F. Streller, R. Agarwal, **F. Mangolini**, *Thin Film Metal Silicides and Method for Formation*, U.S. Patent No. 15/890,465.

PRESENTATIONS AT INTERNATIONAL CONFERENCES *(presenting author)*

25 keynote lectures, invited talks & seminars

- **F. Mangolini**, *Imaging X-Ray Absorption Spectroscopic Investigation of the Mechanisms Behind the Environmental Dependence of the Tribological Properties of Amorphous Carbon Surfaces.* Molecular Mechanisms of Tribochemistry and Lubrication, Centre Européen de Calcul Atomique et Moléculaire (CECAM), Lausanne, Switzerland. January 2020
- **F. Mangolini**, *Fundamental Surface-Analytical Investigations in Tribology: The Challenges of Studying Phenomena at Sliding Interfaces.* Seminar at the Society of Tribologists and Lubrication Engineers (STLE) Houston Section, Houston, USA. January 2019
- **F. Mangolini**, *Fundamental Studies of Tribological Phenomena in Complex Engineering Systems: from Laboratory Equipment to the International Space Station.* Southwest Research Institute, San Antonio, USA, November 2019
- **F. Mangolini**, *Environmental Effects on the Friction Response of Amorphous Carbon Materials.* STLE/JAST Forum of Young Tribologists Symposium, International Tribology Conference, Sendai, Japan, September 2019
- **F. Mangolini**, *Fundamental Studies of Tribological Phenomena in Complex Engineering Systems: from Laboratory Equipment to the International Space Station.* Center for Mechanics of Solids, Structures, and Materials, University of Texas at Austin, Austin, USA. April 2019
- **F. Mangolini**, *Fundamental Studies of Tribological Phenomena in Complex Engineering Systems: from Laboratory Equipment to the International Space Station.* University of North Texas, Denton, USA. March 2019
- **F. Mangolini**, *Engineering Material Surfaces for Extreme Environments and Conditions Far from Equilibrium.* 2018 Italian Scientists and Scholars of North America Foundation (ISSNAF) Annual Event, Washington DC, USA. October 2018
- **F. Mangolini**, *Fundamental Studies of Tribological Phenomena in Complex Engineering Systems: from Laboratory Equipment to the International Space Station.* U.S. Army Research Laboratory, Aberdeen Proving Ground, USA. August 2018
- **F. Mangolini**, K.D. Koshigan, M.H. Van Benthem, J.A. Ohlhausen, J.B. McClimon, J. Hilbert, J. Fontaine, R.W. Carpick, *Tribochemistry and Environmental Effects in Friction of Amorphous Carbon Films.* 14th International Ceramic Congress, Perugia, Italy. June 2018
- **F. Mangolini**, K.D. Koshigan, M.H. Van Benthem, J.A. Ohlhausen, J.B. McClimon, J. Hilbert, J. Fontaine, R.W. Carpick, *Thermally- and Tribologically-Induced Structural Evolution of Advanced Amorphous Carbon-Based Surface.* ETH Zurich, Zurich, Switzerland. December 2017
- **F. Mangolini**, *Fundamental Surface-Analytical Investigations in Tribology: The Challenges of Studying Phenomena at Sliding Interfaces.* BP Workshop on X-ray Photoelectron Spectroscopy, Chicago, USA. November 2017
- **F. Mangolini**, K.D. Koshigan, M.H. Van Benthem, J.A. Ohlhausen, J.B. McClimon, J. Hilbert, J. Fontaine, R.W. Carpick, *Effect of Hydrogen and Oxygen Partial Pressure on the Tribochemistry of Silicon Oxide-Containing Hydrogenated Amorphous Carbon.* World Tribology Congress 2017, Beijing, China. September 2017

- **F. Mangolini**, K.D. Koshigan, M.H. Van Benthem, J.A. Ohlhausen, J.B. McClimon, J. Hilbert, J. Fontaine, R.W. Carpick, *Imaging X-Ray Absorption Spectroscopic Investigation of the Mechanisms Behind the Environmental Dependence of the Tribological Properties of Amorphous Carbon Surfaces*. Tribology and Interfaces in Functional Materials Workshop, DESY Synchrotron Facility, Hamburg, Germany. March 2017
- **F. Mangolini**, J.B. McClimon, J. Hilbert, J.R. Lukes, R.W. Carpick, *Thermally- and Tribologically-Induced Structural Evolution of Advanced Amorphous Carbon-Based Surfaces*. Cambridge Graphene Centre, University of Cambridge, Cambridge, UK. December 2016
- **F. Mangolini**, *Fundamental Surface-Analytical Investigations in Tribology: The Challenges of Studying Phenomena at Sliding Interfaces*. 6th European Chemistry Congress (EuCheMS), Seville, Spain. September 2016
- **F. Mangolini**, J.B. McClimon, R.W. Carpick, J. Fontaine, *Quantitative Evaluation of the Carbon Hybridization State by Near Edge X-Ray Absorption Fine Structure Spectroscopy.* Incontro di Spettroscopia Analitica (ISA) 2016, organized by the Italian Chemical Society, Matera, Italy. May 2016 (Mazzucotelli Award at the Analytical Spectroscopy Congress, Matera, Italy, May 2016)
- **F. Mangolini**, *Fundamental Surface-Analytical Investigations in Tribology: The Challenges of Studying Phenomena at Sliding Interfaces*. School of Chemical Engineering, University of Birmingham, Birmingham, UK. November 2015
- **F. Mangolini**, J.B. McClimon, J. Hilbert, J.R. Lukes, R.W. Carpick, *Unraveling the Physical Pathways and Energetics of the Thermally-Induced Structural Evolution of Advanced Amorphous Carbon-Based Surfaces*. Institute of Functional Surfaces, University of Leeds, Leeds, UK. November 2015
- **F. Mangolini**, K.D. Koshigan, N.N. Gosvami, J.B. McClimon, J.A. Bares, D.G. Yablon, J. Fontaine, R.W. Carpick, *Fundamental Surface-Analytical Investigations of Shear-Induced Mechanochemistry*. Workshop "Chemical and Structural Transformations in Materials under Mechanical Load", Centre Européen de Calcul Atomique et Moléculaire (CECAM), Lausanne, Switzerland. September 2015
- **F. Mangolini**, J.B. McClimon, J. Hilbert, J.R. Lukes, R.W. Carpick, *Unraveling the Physical Pathways and Energetics of the Thermally-Induced Structural Evolution of Advanced Amorphous Carbon-Based Surfaces*. Dipartimento di Fisica, Università di Modena e Reggio Emilia, Italy, May 2015
- **F. Mangolini**, J.B. McClimon, J. Hilbert, J.R. Lukes, R.W. Carpick, *Unraveling the Physical Pathways and Energetics of the Thermally-Induced Structural Evolution of Advanced Amorphous Carbon-Based Surfaces*. Laboratoire de Tribologie et Dynamique des Systèmes, Ecole Centrale de Lyon, Lyon, France. January 2015
- **F. Mangolini**, *Fundamental Surface-Analytical Investigations in Tribology: The Challenges of Studying Phenomena at Sliding Interfaces*. Italian Chemical Society (SCI) XXV Congress, Cosenza, Italy. September 2014
- **F. Mangolini**, B.A. Krick, W.G. Sawyer, T.W. Scharf, J.A. Ohlhausen, S.V. Prasad, J. Hilbert, J. Fontaine, R.W. Carpick, *Investigating the Tribochemistry of Silicon Oxide-Doped Diamond-Like Carbon: from Ultra-High Vacuum Systems to the International Space Station*. Laboratoire de Tribologie et Dynamique des Systèmes, Ecole Centrale de Lyon, Lyon, France. September 2013
- **F. Mangolini**, *In Situ Attenuated Total Reflection Tribometry: a Powerful Tool for Investigating Tribochemistry at the Lubricant-Substrate Interface*. ExxonMobil Friction and Wear Symposium, Princeton, USA. April 2013
- **F. Mangolini**, *Optical Profilometry*. European Marie Curie International Training Network on Marine Biofouling (SEACOAT), ETH Zurich, Zurich, Switzerland. July 2010

24 conference contributions (talks)

- **F. Mangolini**, K.D. Koshigan, M.H. Van Benthem, J.A. Ohlhausen, J.B. McClimon, J. Hilbert, J. Fontaine, R.W. Carpick, *How Hydrogen and Oxygen Vapor Affect the Tribochemistry of Silicon- and Oxygen-Containing Hydrogenated Amorphous Carbon.* American Chemical Society (ACS) National Meeting & Exposition, San Diego, USA. August 2019
- **F. Mangolini**, J.B. McClimon, J. Hilbert, J.R. Lukes, R.W. Carpick, *Addressing the Achilles' Heels of Amorphous Carbon Overcoats with Doping: Mechanisms of Thermal and Oxidative Degradation*. Information Storage and Processing Systems (ISPS), The American Society of Mechanical Engineers, San Diego, USA. June 2019
- **F. Mangolini**, B.A. Krick, T.D.B. Jacobs, S. Khanal, F. Streller, J.B. McClimon, J. Hilbert, S.V. Prasad, T.W. Scharf, J.A. Ohlhausen, J.R. Lukes, W.G, Sawyer, R.W. Carpick, *Addressing the Achilles' Heels of Amorphous Carbon with Doping: Mechanisms of Thermal and Oxidative Degradation – from Earth to the International Space Station*. 2018 Materials Research Society MRS Fall Meeting & Exhibit, Boston, USA. November 2018
- **F. Mangolini**, K.D. Koshigan, M.H. Van Benthem, J.A. Ohlhausen, J.B. McClimon, J. Hilbert, J. Fontaine, R.W. Carpick, *Imaging X-Ray Absorption Spectroscopic Investigation of the Mechanisms Behind the Environmental Dependence of the Tribological Properties of Amorphous Carbon Surfaces*. American Vacuum Society AVS 64th International Symposium & Exhibition, Tampa, USA. October 2017 (*recorded presentation available to AVS members in the AVS Technical Library)*

- **F. Mangolini**, K.D. Koshigan, M.H. Van Benthem, J.A. Ohlhausen, J.B. McClimon, J. Hilbert, J. Fontaine, R.W. Carpick, *Effect of Hydrogen and Oxygen Partial Pressure on the Tribochemistry of Silicon Oxide-Containing Hydrogenated Amorphous Carbon.* American Chemical Society (ACS) National Meeting & Exposition, San Francisco, USA. April 2017
- **F. Mangolini**, K.D. Koshigan, M.H. Van Benthem, J.A. Ohlhausen, J.B. McClimon, J. Hilbert, J. Fontaine, R.W. Carpick, *Effect of Hydrogen and Oxygen Partial Pressure on the Tribochemistry of Silicon Oxide-Containing Hydrogenated Amorphous Carbon.* Society of Tribologists and Lubrication Engineers (STLE) Frontiers Conference, Chicago, USA. November 2016
- **F. Mangolini**, J.B. McClimon, R.W. Carpick, J. Fontaine, *Quantitative Evaluation of the Carbon Hybridization State by Near Edge X-Ray Absorption Fine Structure Spectroscopy.* American Vacuum Society AVS 63rd International Symposium & Exhibition, Nashville, USA. November 2016 (*recorded presentation available to AVS members in the AVS Technical Library)*
- **F. Mangolini**, J. Hilbert, J.B. McClimon, J.R. Lukes, R.W. Carpick, *How to Make Amorphous Carbon Stable: An In Situ XPS and NEXAFS Investigation of the Thermally-Induced Structural Evolution of Amorphous Carbon Surfaces*. 6th European Chemistry Congress (EuCheMS), Seville, Spain. September 2016
- **F. Mangolini**, K.D. Koshigan, M.H. Van Benthem, J.A. Ohlhausen, J.B. McClimon, J. Hilbert, J. Fontaine, R.W. Carpick, *Effect of Hydrogen and Oxygen Partial Pressure on the Tribochemistry of Silicon Oxide-Containing Hydrogenated Amorphous Carbon.* 43rd Leeds-Lyon Symposium on Tribology, Leeds, UK. September 2016
- **F. Mangolini**, K.D. Koshigan, M.H. Van Benthem, J.A. Ohlhausen, J.B. McClimon, J. Hilbert, J.R. Lukes, J. Fontaine, R.W. Carpick, *Thermally- and Tribologically-Induced Structural Evolution of Silicon Oxide-Doped Hydrogenated Carbon Surfaces.* Gordon Research Seminar – Tribology, Lewiston, USA. June 2016
- **F. Mangolini**, N.N. Gosvami, J.B. McClimon, K.D. Koshigan, J. Hilbert, J.A. Bares, D.G. Yablon, J. Fontaine, R.W. Carpick, *Fundamental Surface-Analytical Investigations in Tribology: the Challenges of Studying Phenomena at Sliding Interfaces.* 80th Annual Conference of the Deutsche Physikalische Gesellschaft (DPG) and DPG Spring Meeting, Regensburg, Germany. March 2016
- **F. Mangolini**, J. Hilbert, J.B. McClimon, J.R. Lukes, R.W. Carpick, *How to Make Amorphous Carbon Stable: An In Situ XPS and NEXAFS Investigation of the Thermally-Induced Structural Evolution of Amorphous Carbon Surfaces*. American Vacuum Society AVS 62nd International Symposium & Exhibition, San Jose, USA. October 2015 (*recorded presentation available to AVS members in the AVS Technical Library)*
- **F. Mangolini**, K.D. Koshigan, J.B. McClimon, S. Bec, J. Hilbert, R.W. Carpick, J. Fontaine, *Thermally-Induced Evolution of Silicon Oxide-Doped Hydrogenated Amorphous Carbon: Effect on Nanoscale Tribo-Mechanical Properties, Surface Structure, and Chemistry*. Lubricated Contact Cádiz, Cádiz, Spain. April 2015
- **F. Mangolini**, J.B. McClimon, J. Hilbert, R.W. Carpick, *Measuring Schmutz: Accounting for Nanometer-Thick Adventitious Carbon Contamination in X-Ray Absorption Spectra of Carbon-Based Materials*. American Vacuum Society AVS 61st International Symposium & Exhibition, Baltimore, USA. November 2014
- **F. Mangolini**, J.B. McClimon, J. Hilbert, J.R. Lukes, R.W. Carpick, *In Situ XPS and NEXAFS Investigation of the Thermally-Induced Structural Evolution of Advanced Amorphous Carbon-Based Surfaces*. American Chemical Society (ACS) National Meeting & Exposition, San Francisco, USA. August 2014
- **F. Mangolini**, J. Hilbert, J.B. McClimon, J.R. Lukes, R.W. Carpick, *Unraveling the Physical Pathways and Energetics of the Thermally-Induced Structural Evolution of Hydrogenated Amorphous Carbon Surfaces*. American Chemical Society (ACS) 2014 Colloid & Surface Science Symposium, Philadelphia, USA. June 2014
- **F. Mangolini**, K.D. Koshigan, J. Hilbert, J.R. Lukes, S. Bec, J. Fontaine, R.W. Carpick, *Thermally-Induced Evolution of Silicon-Oxide Diamond-Like Carbon: Effect of Nanoscale Tribo-Mechanical Properties, Surface Structure, and Chemistry*. Society of Tribologists and Lubrication Engineers (STLE) 69th Annual Meeting, Lake Buena Vista, Florida, USA. May 2014
- **F. Mangolini**, J. Hilbert, J.R. Lukes, R.W. Carpick, *Assessment of the Thermo-Oxidative Stability of Silicon Oxide-Doped Diamond-Like Carbon by In Situ Environmental X-Ray Photoelectron Spectroscopy*. World Tribology Congress 2013, Turin, Italy. September 2013
- **F. Mangolini**, B.A. Krick, W.G. Sawyer, T.W. Scharf, J.A. Ohlhausen, S.V. Prasad, J. Hilbert, J. Fontaine, R.W. Carpick, *Investigating the Tribochemistry of Silicon Oxide-Doped Diamond-Like Carbon: from Ultra-High Vacuum Systems to the International Space Station*. 40th Leeds-Lyon Symposium on Tribology & Tribochemistry Forum 2013 (satellite forum of the World Tribology Congress WTC 2013), Lyon, France. September 2013
- **F. Mangolini**, F. Rose, J. Hilbert, R.W. Carpick, *Assessment of the Thermal Stability of Hydrogenated Amorphous Carbon for Next-Generation Hard Disk Applications*. Thermal Analysis Forum of the Delaware Valley: Application of Thermal Analysis in Research, organized by ASTM International, West Conshohocken, USA. March 2013

- **F. Mangolini**, A. Rossi, N.D. Spencer, *Reactivity of an Ashless Anti-Wear Additive on Iron Surfaces: a Combined In Situ (ATR/FT-IR) and Ex Situ (XPS) Investigation*. Advances in Lubrication: Linking Molecular, Meso, and Machine Scales, organized by the Engineering Conferences International (ECI), Puntarenas, Costa Rica. January 2012
- **F. Mangolini**, A. Rossi, N.D. Spencer, *Environmentally-Compatible, Energy-Efficient Lubricants: a Study of the Surface Reactivity of Ashless Additives*. Materials Science Colloquium, ETH Zurich, Zurich, Switzerland. March 2010
- **F. Mangolini**, A. Rossi, N.D. Spencer, *In Situ Attenuated Total Reflection (ATR) Tribometry of Environmentally Friendly Antiwear Additives*. Tribochemistry 2009 (satellite forum of the World Tribology Congress WTC 2009), Kyoto, Japan. September 2009
- **F. Mangolini**, A. Rossi, N.D. Spencer, *Thermal Reactivity of Environmentally Friendly Antiwear Additives in Oil Solution*. Advances in Boundary Lubrication and Boundary Surface Films, organized by the Engineering Conferences International (ECI), Seville, Spain. April 2009

CONFERENCE POSTER PRESENTATIONS *(presenting author)*

14 conference contributions (posters)

- Z. Li, R. Chrostowski, E. Naccarelli, N.A.M. Vergara, J.P. Smith, R.S. Misage, **F. Mangolini**, *Engineering Materials Surfaces for Extreme Environments and Conditions Far From Equilibrium.* Energy@UT Research Expo, The University of Texas at Austin, USA. October 2019
- **F. Mangolini**, M. Walter, J.B. McClimon, M. Moseler, R.W. Carpick, *Quantitative Evaluation of the Carbon Hybridization State by X-Ray Absorption and Photoelectron Spectroscopy.* Gordon Research Conference – Tribology, Lewiston, USA. June 2018
- **F. Mangolini**, J.B. McClimon, R.W. Carpick, *Quantitative Evaluation of the Carbon Hybridization State by Near Edge X-Ray Absorption Fine Structure Spectroscopy.* Q2XAFS International Workshop on Improving Data Quality in XAFS Spectroscopy, Diamond Light Source, UK. August 2017
- **F. Mangolini**, K.D. Koshigan, M.H. Van Benthem, J.A. Ohlhausen, J.B. McClimon, J. Hilbert, J.R. Lukes, J. Fontaine, R.W. Carpick, *Thermally- and Tribologically-Induced Structural Evolution of Silicon Oxide-Doped Hydrogenated Carbon Surfaces.* Gordon Research Conference – Tribology, Lewiston, USA. June 2016
- **F. Mangolini**, K.D. Koshigan, M.H. Van Benthem, J.A. Ohlhausen, J.B. McClimon, J. Hilbert, J. Fontaine, R.W. Carpick, *Effect of Hydrogen and Oxygen Partial Pressure on the Tribochemistry of Silicon Oxide-Containing Amorphous Carbon.* Tribology: Interactions beyond the Surface, Ecole Centrale de Lyon, Lyon, France. March 2016
- **F. Mangolini**, J.B. McClimon, K.D. Koshigan, F. Rose, J. Hilbert, J. Lukes, J. Fontaine, R.W. Carpick, *Fundamental Studies of Tribological Phenomena in Complex Engineered Systems: from Laboratory Systems to the International Space Station.* 2014 Italian Scientists and Scholars of North America Foundation (ISSNAF) Annual Event, Washington DC, USA. November 2014
- **F. Mangolini**, F. Rose, J. Hilbert, J.R. Lukes, R.W. Carpick, *Thermally-Induced Evolution of Hydrogenated Amorphous Carbon Surfaces.* American Vacuum Society AVS 60th International Symposium & Exhibition, Long Beach, USA. November 2013
- **F. Mangolini**, B.A. Krick, W.G. Sawyer, S.V. Prasad, J. Hilbert, R.W. Carpick, *Performance of Silicon Oxide-Doped Diamond-Like Carbon (SiO_x-DLC) in Low Earth Orbit (LEO)*. Gordon Research Conference – Tribology, Waterville, USA. July 2012
- **F. Mangolini**, A. Rossi, N.D. Spencer, *Growth of Thermal Films from an Environmentally Friendly Anti-Wear Additive: a Combined In Situ (ATR/FT-IR) and Ex Situ (XPS) Analytical Study*. Annual Meeting of the Swiss Working Group on Surfaces and Interface Science (SAOG), Fribourg, Switzerland. January 2010
- **F. Mangolini**, A. Rossi, N.D. Spencer, *Mechanical Stability of Thermal Films Formed on Bearing Steel in the Presence of Environmentally Friendly Additives: an XPS Analytical Study*. World Tribology Congress WTC 2009, Kyoto, Japan. September 2009
- **F. Mangolini**, A. Rossi, N.D. Spencer, *Tribological Properties of Thermal Films Formed on Iron in the Presence of Environmentally Friendly Additives: an i-XPS Analytical Study*. Gordon Research Conference – Tribology, Waterville, USA. July 2008
- **F. Mangolini**, A. Rossi, N.D. Spencer, *Chemical Analysis by i-XPS of Thermal Films Formed on Iron in the Presence of an Environmentally Friendly Additive*. Incontro di Spettroscopia Analitica (ISA) 2008, organized by the Italian Chemical Society, Ferrara, Italy. June 2008
- **F. Mangolini**, A. Rossi, N.D. Spencer, *Thermal Reactivity of Oil Additives: a Comparison between Zinc Dialkyldithiophosphate (ZnDTP) and Triphenyl Phosphorothionate (TPPT)*. European Conference on Application of Surface and Interface Analysis (ECASIA) 2007, Brussels, Belgium. September 2007
- **F. Mangolini**, L. Magagnin, P.L. Cavallotti, *Pulse Plating of Sacrificial Mn–Cu Alloys on Steel*. NACE's Annual Meeting, CORROSION/2006 at San Diego Convention Center in San Diego, California, USA. March 2006 (**3rd place in Harvey Herro Award**)

CONFERENCE POSTER PRESENTATIONS *(presented by students from The University of Texas at Austin)*

3 conference contributions (posters)

- Z. Li, A. Dolocan, O. Morales-Collazo, J.T. Sadowski, H. Celio, R. Chrostowski, J. Brennecke, **F. Mangolini**, *In Situ Study of the Lubrication Mechanism of Phosphonium Phosphate Ionic Liquid in Nanoscale Single-Asperity Sliding Contacts.* Graduate and Industry Network, The University of Texas at Austin, USA. February 2020
- Z. Li, A. Dolocan, O. Morales-Collazo, J.T. Sadowski, H. Celio, R. Chrostowski, J. Brennecke, **F. Mangolini**, *In Situ Study of the Lubrication Mechanism of Phosphonium Phosphate Ionic Liquid in Nanoscale Single-Asperity Sliding Contacts.* Society of Tribologists and Lubrication Engineers (STLE) Frontiers Conference, Chicago, USA. October 2019 (*second poster award winner*)
- Z. Li, R. Chrostowski, E. Naccarelli, N.A.M. Vergara, J.P. Smith, R.S. Misage, **F. Mangolini**, *Engineering Materials Surfaces for Extreme Environments and Conditions Far From Equilibrium.* The University of Texas at Austin, USA. March 2019

OTHER WORKS PRESENTED AT CONFERENCES *(talks & posters presented by collaborators)*

My work was presented by co-authors at **32** conferences (**4** invited talks; **16** talks; **12** posters)

SCHOLARSHIPS & FELLOWSHIPS

- Small Grant for Scientific Activities from the Royal Society of Chemistry for attending the American Vacuum Society AVS 63rd International Symposium & Exhibition, Nashville, USA. November 2016 (value: $1400)
- Taiho Kogyo Tribology Research Foundation (TTRF) Grant for Young Tribologists for attending the conference *Tribology: Interactions beyond the Surface*, Ecole Centrale de Lyon, Lyon, France. March 2016 (value: $500)
- Andrew Carnegie Research Fund from the Institute of Materials, Minerals, and Mining (IOM3) for attending the *80th Annual Conference of the Deutsche Physikalische Gesellschaft (DPG) and DPG Spring Meeting*, Regensburg, Germany. March 2016 (value: $350)
- Marie Skłodowska-Curie Individual Fellowship (Programme H2020-MSCA-IF-2015). Proposal number: 706289 (value: $211,914.05)
- Marie Curie International Outgoing Fellowship for Career Development (IOF). Contract number: PIOF-GA-2012-328776 (value: $323,521.71)
- Carl Storm Underrepresented Minority Fellowship for attending the Gordon Research Conference – Tribology, Waterville, USA. July 2012 (value: $800)
- Fellowship for Young Tribologists for attending the Advances in Lubrication: Linking Molecular, Meso, and Machine Scales conference, organized by the Engineering Conferences International (ECI), Puntarenas, Costa Rica. January 8th-13th, 2012 (value: $1,200)
- Postdoctoral Fellowship for Prospective Researchers by the Swiss National Science Foundation (SNSF) (value: $55,000)
- NACE Foundation Travel Assistance for participating to the Student Poster Session of NACE International CORROSION/2006, San Diego, California, USA (value: $1,200)

AWARDS

- Finalist 2018 Italian Scientists and Scholars of North America Foundation (ISSNAF) Award for Young Investigators – Franco Strazzabosco Award for Engineers
- Nominated among the top reviewers for the journal *Tribology Letters* in 2015 and 2016
- Finalist European Young Chemist Award (EYCA) 2016, European Chemistry Congress (EuCheMS), Seville, Spain, September 2016
- Mazzucotelli Award at the Analytical Spectroscopy Congress, Matera, Italy, May 2016. The award was conferred by the Analytical Spectroscopy Group (Analytical Chemistry Division of the Italian Chemical Society) in recognition of the originality, quality, and relevance of my research
- Finalist 2014 Marie Sklodowska-Curie Action (MSCA) Prizes – Nurturing Research Talents. Award in recognition of: a) notable tutoring and lecturing of students and Ph.D. candidates; and b) encouraging young people to engage in a research career
- Finalist 2014 Italian Scientists and Scholars of North America Foundation (ISSNAF) Award for Young Investigators – Physics, Astrophysics, Chemistry, Mathematics
- Field Best Presentation Award (U36) at the World Tribology Congress 2009, Kyoto, Japan, September 2009
- Third Place in Harvey Herro Award for the Best Poster in Applied Corrosion Technology at NACE International CORROSION/2006, San Diego, California, March 2006

FUNDING

National Synchrotron Light Source II Beamtime **01/2020 – 12/2020**
Role: PI
Value: N/A
Description: X-ray absorption spectroscopy experiments at the National Synchrotron Light Source II (NSLS II, Brookhaven National Laboratory, Upton, NY, USA)

Walker Department of Mechanical Engineering, The University of Texas at Austin **09/2019 – 08/2020**
Role: PI
Value: $23,690
Description: award to identify the surface phenomena that occur in CoCr alloys upon sliding in biological solutions and quantitatively evaluate their effect on the corrosion and wear resistance of these alloys

The University of Texas at Austin - Sandia National Laboratories Partnership **10/2019 – 09/2021**
Role: PI
Value: $170k
Description: award to develop a mechanistic understanding of the friction evolution in lamellar solids using advanced surface-analytical spectroscopic techniques

The Welch Foundation – Research Grant Program **06/2019 – 05/2022**
Role: PI
Value: $195k
Description: award to develop a nanoencapsulation-based method for exploiting a class of lubricious chemical compounds that are insoluble in hydrocarbon fluids, namely halogen-free boron-based ionic liquids, as friction- and wear-reducing additives in engine oils

Center for Functional Nanomaterials **01/2019 – 12/2020**
Role: PI
Value: N/A
Description: X-ray photoemission electron microscopy experiments at the National Synchrotron Light Source II (NSLS II, Brookhaven National Laboratory, Upton, NY, USA)

Ralph E. Powe Junior Faculty Enhancement Award **06/2018 – 05/2019**
Role: PI
Value: $10k
Description: award to start developing a research program at The University of Texas at Austin focusing on the *in situ* investigation of the mechano-chemistry of ionic liquids using atomic force microscopy (AFM)

Advanced Light Source (ALS) Synchrotron **09/2018 – 12/2018**
Role: PI
Value: N/A
Description: scanning X-ray transmission microscopy experiments at ALS Synchrotron (RAPIDD proposal)

EPSRC Programme Grant **09/2017 – 08/2022**
Role: Co-PI
Value: $9m
Description: funding to develop a framework between the University of Leeds and the University of Sheffield to facilitate the prediction, understanding, and control of friction

EPSRC First Grant **04/2017 – 01/2018**
Role: PI
Value: $158,805
Description: funding to undertake fundamental research focusing on the *in situ* investigation of the mechano-chemistry of ionic liquids using atomic force microscopy (AFM)

Funding for the Organization of a Symposium at an International Conference **11/2016 – 03/2017**
Role: PI
Value: $14,000
Description: secured financial support from industries (Aerospace Corporation, Nanovea, Anton Paar, L'Oreal, AkzoNobel, Croda), research foundation (the Taiho Kogyo Tribology Research Foundation), and professional society (the ACS Colloid and Surface Chemistry division) for the organization of the Symposium *Chemistry and Physics of Tribology* at the 253rd American Chemical Society (ACS) National Meeting & Exhibition, San Francisco, California (USA), April 2017

EPSRC Propensity Outcomes Framework Pump Priming Projects Funding **10/2016 – 03/2017**
Role: PI
Value: $50,988
Description: pump-priming funding to undertake fundamental research focusing on the *in situ* investigation of the mechano-chemistry of ionic liquids using atomic force microscopy (AFM)

EPSRC DTP Studentship **10/2016 – 09/2018**
Role: PI
Value: $79,100
Description: PhD studentship fully funded by the Engineering and Physical Sciences Research Council (EPSRC) to carry out fundamental research under my supervision (co-supervision by A. Neville, M. Bryant, and P. Millner, University of Leeds) on tribochemistry and tribocorrosion of artificial joint materials

Marie Skłodowska-Curie Individual Fellowship **05/2016 – 04/2018**
Role: PI
Value: $211,914
Description: fellowship to carry out independent research on the mechano-chemistry of ionic liquids at the University of Leeds (Leeds, UK)

Laidlaw Undergraduate Research & Leadership Scholarships (UGRL) **06/2016 – 08/2016**
Role: PI
Value: $3,100
Description: scholarship to support an undergraduate student to carry out research under my supervision over the summer on the tribological properties of oil-soluble ionic liquids

SOLEIL Synchrotron – French National Synchrotron Facility **01/2015 – 06/2017**
Role: PI
Value: N/A
Description: X-ray photoemission electron microscopy experiments at SOLEIL Synchrotron (French National Synchrotron Facility, Paris, France)

Fall 2013 University Research Foundation Award **03/2014 – 02/2015**
Role: Co-PI
Value: $50,000
Description: grant awarded by the University Research Foundation (URF) of University of Pennsylvania to develop an *in situ* tribological apparatus to be installed inside an environmental X-ray photoelectron spectrometer

Marie Curie International Outgoing Fellowship for Career Development **04/2013 – 09/2015**
Role: PI
Value: $323,522
Description: postdoctoral fellowship to carry out independent research on the thermally-induced surface structural evolution and tribochemistry of hard carbon-based materials at the University of Pennsylvania (Philadelphia, USA) and Ecole Centrale de Lyon (Lyon, France)

National Synchrotron Light Source Beamtime **02/2013 – 12/2015**
Role: PI
Value: N/A
Description: X-ray absorption spectroscopy experiments at the National Synchrotron Light Source (NSLS, Brookhaven National Laboratory, Upton, NY, USA)

Swiss National Science Foundation Fellowship for Prospective Researchers **09/2011 – 08/2012**
Role: PI
Value: $55,000
Description: postdoctoral fellowship to carry out independent research on tribochemistry of hard carbon-based materials at the University of Pennsylvania (Philadelphia, PA, USA)

CONFERENCE & EVENTS ORGANIZATION, CHAIRS

- Lead organizer of **5** symposia at international conferences
  - Symposium *Forum for Young Tribologists* at the International Tribology Conference, Sendai, Japan, September 2019
  - Symposium *Water and Tribological Interfaces* at the 258th American Chemical Society (ACS) National Meeting & Exhibition, San Diego, California (USA), August 2019
  - Symposium *Tribology* at the 65th American Vacuum Society (AVS) International Symposium & Exhibition, Laguna Beach, California (USA), October 2018

  - Symposium *Chemistry and Physics of Tribology* at the 253rd American Chemical Society (ACS) National Meeting & Exhibition, San Francisco, California (USA), April 2017
  - Symposium *Chemical Foundations of Tribology* at the 248th American Chemical Society (ACS) National Meeting & Exhibition, San Francisco, California (USA), August 2014
- Program committee member of **7** symposia at international conferences
  - Symposium *Advanced Surface Engineering* at the 67th American Vacuum Society (AVS) International Symposium & Exhibition, Denver, Colorado (USA), October 2020
  - Symposium *Advanced Surface Engineering* at the 66th American Vacuum Society (AVS) International Symposium & Exhibition, Columbus, Ohio (USA), October 2019
  - Symposium *Experiments and Simulations Towards Understanding Tribology Across Length-Scales* at the Materials Science and Engineering – European Congress and Exhibition on Advanced Materials and Processes, Darmstadt, Germany, September 2018
  - Symposium *Tribology* at the 64th American Vacuum Society (AVS) International Symposium & Exhibition, Tampa, Florida (USA), October 2017
  - Symposium *Tribology* at the 63rd American Vacuum Society (AVS) International Symposium & Exhibition, Nashville, Tennessee (USA), November 2016
  - *Leeds-Lyon Symposium on Tribology*, Leeds (UK), September 2016
  - Symposium *Tribology* at the 62nd American Vacuum Society (AVS) International Symposium & Exhibition, San Jose, California (USA), October 2015
- Panelist at the mentorship component of the 2018 Gordon Research Seminar (GRS)
- Chairing sessions at **6** international conferences
- Discussion leader at the *Gordon Research Conference – Tribology* conference, Lewiston, USA. June 2018
- Discussion leader at the *Gordon Research Seminar – Tribology* conference, Lewiston, USA. June 2016
- Member of **3** committees for best poster award at international conferences

ACADEMIC SERVICE

- Committee member for graduate student admissions, Texas Materials Institute, Department of Mechanical Engineering, The University of Texas at Austin, Austin, USA. Spring 2019-present
- Ph.D. dissertation committee member
  - E. Ann Dukes, *The Microstructure Changes Produced by Elevated-Temperature Deformation of Niobium*, Texas Materials Institute, Department of Mechanical Engineering, The University of Texas at Austin, Austin, USA. Advisor: Prof. E. Taleff
  - Z. Dai, *Mechanical Response of 2D Materials Under Pressure and Point Loads*, Department of Aerospace Engineering and Engineering Mechanics, The University of Texas at Austin, Austin, USA. Advisor: Prof. N. Lu
  - O. Nordness, *Characterization of Ionic Liquid Microstructures and Their Effect on Thermophysical Properties*, McKetta Department of Chemical Engineering, The University of Texas at Austin, Austin, USA. Advisor: Prof. J. Brennecke
  - K. Rader, *Retrogression Forming of High-Strength Aluminum Alloys*, Texas Materials Institute, Department of Mechanical Engineering, The University of Texas at Austin, Austin, USA. Advisor: Prof. E. Taleff
  - D. Leigh, Texas Materials Institute, Department of Mechanical Engineering, The University of Texas at Austin, Austin, USA. Advisor: Prof. D. Bourell
- Advisor for senior design project
  - *Design of a Vacuum Seal for X-ray Tubes*, Department of Mechanical Engineering, The University of Texas at Austin, Austin, USA. 05/2018-08/2018 (Sponsor: Stellarray)
  - *Valve-Stem Assembly Design for Packing Ring Experimentation*, Department of Mechanical Engineering, The University of Texas at Austin, Austin, USA. 01/2018-05/2018 (Sponsor: Schlumberger)
- External Ph.D. examiner
  - D. Ogawa, *In Situ Monitoring of Tribochemistry of Advanced Lubricant Additives*, ETH Zurich, Zurich, Switzerland. December 2019
  - Cocco, *Sustainability in Cultural Heritage: from Diagnosis to the Development of Innovative Systems for Monitoring and Understanding Corrosion Inside Ancient Brass Wind Instruments*, University of Cagliari and University of Sassari, Italy. January 2017

PROFESSIONAL SERVICE

- Associate Editor for the journal *Tribology Transactions*, Society of Tribologists and Lubrication Engineers (STLE), 02/2019-present

- Technical Editor for *Tribology and Lubrication Technology*, Society of Tribologists and Lubrication Engineers (STLE), 05/2018-present

REVIEW OF SCIENTIFIC JOURNALS *(Publons profile: https://publons.com/author/1186993/filippo-mangolini#profile)*

ACS Applied Materials and Interfaces
ACS Catalysis
ACS Omega
Advanced Materials Interfaces
Applied Physics Letters
Applied Surface Science
Carbon
Coatings
Conference Papers in Science
Diamond and Related Materials
European Physical Journal Applied Physics
International Journal of Materials and Product Technology
Journal of Engineering Tribology
Journal of Low Temperature Physics
The Journal of Physical Chemistry
Lubricants
Lubrication Science
Materials Letters
Nanoscale
Physical Review B
Physical Review Letters
Research – a Science Partner Journal
Scanning
Science Advances
Scientific Reports
Scripta Materialia
Surface Reviews and Letters
Surface & Coatings Technology
Thin Solid Films
Transport Problems
Tribology International
Tribology Letters
Tribology Online
Tribology Transactions
Tribology – Materials, Surfaces & Interfaces
Wear

REVIEW OF GRANT PROPOSAL

- Reviewer for the National Science Foundation, Division of Materials Research, Ceramics Program
- Reviewer for the Oak Ridge Associated Universities (ORAU) programs
- Reviewer for the 2018 ConTex Collaborative Research Grants Call for Proposals

OUTREACH

- Mentor of an elementary (K-5) teacher (Mrs. Ashika Parker) working in my laboratory as part of the Research Experience for Teachers (RET) program, Center for Dynamics and Control of Materials (CDCM) MRSEC, The University of Texas at Austin, Summer 2019
- Mentor of an undergraduate (C. Wang) working in Prof. R.W. Carpick's lab as part of the Research Experiences for Undergraduates (REU) program, Laboratory for Research on the Structure of Matter, University of Pennsylvania, Summer 2012
- Organized **6** outreach events in Philadelphia (USA) open to the general public and attended by thousands of adults, teenagers, and children. Hands-on and interactive activities, demonstrations, and lessons were developed for these events, Fall 2011 – Summer 2014

LANGUAGES

Native Italian
Fluent English
Basic French
Basic German

MEMBERSHIP

American Chemical Society (ACS)
American Society for Engineering Education (ASEE)
American Physical Society (APS)
American Society of Mechanical Engineers (ASME)
American Vacuum Society (AVS)
Italian Chemical Society (SCI)
The Minerals, Metals & Materials Society (TMS)
Materials Research Society (MRS)
Royal Society of Chemistry (RSC)
Sigma Xi (elected full member)
Society of Tribologists and Lubrication Engineers (STLE)

EXTRA-CURRICULAR INVOLVEMENT

Hardball hockey player in the Italian first division between 1997 and 2004
Teaching assistant in skating classes (2000-2003)