



## Polymers in the journal of materials science

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The journal of materials science has a long tradition of publishing papers on polymer materials.

Robert Young FRS, a former long-time Editor and now member of our Distinguished Advisory Board, is one of the Journals most frequent authors. Our main Editors dealing with polymers are Chris Cornelius, Steve Eichhorn, Jamie C. Grunlan, Dale Huber and Maude Jimenez and Greg Rutledge, but 2 other Editors also handle polymer papers: Jean-François Gohy also handles papers for our Energy Materials Topical Collection, and Mohammad Naraghi also handles papers for our Composites Topical Collection.

The purpose of this Editorial is to illustrate for our readers why you should consider the Journal of Materials Science for your next paper on polymeric materials, especially if you think the paper might be of interest to a broader audience including readers working on composites, materials for the life sciences, coatings, electronic materials, and chemical routes to materials. Even the ceramics communities use polymers! Of course, computation, theory and modeling of polymers are all at home in the Journal of Materials Science.

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**Chris Cornelius** is the Dr. Thomas D. McGee and Dr. Ick-Jhin Rick Yoon Department Chair in Materials Science and Engineering at Iowa State University. His research investigates fundamental material interrelationships between structure, physical properties, and transport using synthetic polymers, ionomers, hybrid organic–inorganic materials, and sol–gel glasses. This research spans synthesis to material processing into nanocomposites and nanofibers, focusing on transport phenomena, and thermodynamics. Materials are

created to study molecule and ion-selective membranes, gas separation, water desalination, energy production and storage, ionic polymer-metal composite (IPMC) actuator compositional relationships, and tailored surfaces to control wetting. He has published numerous technical papers and frequently speaks at national meetings. Before academia, he was a Research Engineer at Dow Plastics, running a pilot plant creating metallocene-based polyolefins and elastomers, a 3M Process Engineer managing a non-woven respirator production line, and a scientist at Sandia National Laboratories developing materials for fuel cells, water desalination, and gas separations. In addition to research and teaching, he has been actively involved in community outreach and minority efforts for many years.



**Steve Eichhorn** is currently Chair (full-Professor) of Materials Science and Engineering at the University of Bristol. His research interests are in the area of natural biopolymers, specifically and mainly cellulosic materials. This work encompasses understanding of the physical and chemical properties of cellulose and its derivatives, as well as its conversion and use in functional materials e.g., batteries, supercapacitors, water filtration media and solar cells. Professor Eichhorn works with a number of companies developing applications for packaging, food and composite materials. He has published over 200 research papers, with over 17,000 citations and a H-index of 56. He is the main author of two highly cited review papers in *Journal of Materials Science* that focus on the use of cellulosic materials in composites and other applications. Professor Eichhorn was the winner of the Rosenhain Medal and Award from the Institute of Materials, Minerals and Mining (IOM3) in 2012, the Hayashi Jisuke Prize from the Cellulose Society of Japan in 2017, and the Swinburne Medal from the IOM3 in 2020. He was the first UK Chair of the Cellulose and Renewable Materials Division of the American Chemical Society,

and is also a fellow of the same division. He is a Fellow of the Royal Society of Chemistry, the Institute of Physics, the IOM3 and the Royal Microscopical Society.



**Jaime Grunlan** is currently the Leland T. Jordan'29 Chair Professor of Mechanical Engineering at Texas A&M University. Broadly speaking Dr. Grunlan's research is focused on polyelectrolyte-based complexes (or assemblies) in the form of surface treatments (or coatings). He has pioneered the field of environmentally-benign flame retardant nanocoatings. He has 6 issued US Patents on this topic (all in the past 7 years), all of which have been licensed by various companies, which speaks to the "real world" impact of Jaime's work. Professor Grunlan's flame retardant coating work has been highlighted in *Nature*, *Smithsonian Magazine*, *Chemical & Engineering News* and in several major newspapers and news telecasts. Fire suppression treatments are facing major legislation from governments around the world that are demanding safer strategies for protecting buildings, airplanes, clothing and household furnishings. Current flame retardant treatments often contain toxic and environmentally harmful chemicals. Prof. Grunlan's research group has developed two water-based "green" coating technologies that protect fabric used in clothing, and foam used in upholstered furniture, without using toxic molecules. Jaime is also a world leader in organic thermoelectric materials and gas barrier thin films food, pharmaceutical, and flexible electronics packaging/protection. He holds 15 issued U.S. patents and several EU patents. He has published more than 200 journal papers, with an h-index of 64 and more than 24,000 citations. In 2018, Prof. Grunlan became a Fellow of the American Society of Mechanical Engineers (ASME) and was awarded a doctorate honoris causa (i.e., honorary doctorate) from the University of South Brittany (Lorient, France). In 2019, he became a Senior

Member of the National Academy of Inventors (NAI). In 2023, Jaime became a Fellow of the American Chemical Society.



**Dale L. Huber** is currently a Distinguished Member of the Technical Staff at Sandia National Laboratories in the Center for Integrated Nanotechnology (CINT), a U.S. Department of Energy funded Nanoscale Science Research Center. He holds a B.A. in Chemistry from the University of Pennsylvania and a PhD in Polymer Science from the University of Connecticut. His broad interests in polymer science include novel approaches to the synthesis of polymer brushes, particularly surface-initiated polymerizations. He also studies nanostructured polymers at surfaces and interfaces, and nanocomposites in polymer matrices. He has authored more than 100 publications, 10 awarded patents, and has collaborated with industrial partners to commercialize several products. His work has been cited more than 7,000 times and his H-index is 32. He has been selected for an R&D 100 award and has been recognized for successfully transferring technologies to industry by received a Notable Technology Award and a National Excellence in Technology Transfer Award from the Federal Laboratory Consortium. He is a Fellow of the Royal Society of Chemistry, has held several leadership roles in the Materials Research Society, and is active in the American Chemical Society.

**Maude Jimenez** is Full Professor at Lille University. She has a background in both process engineering and polymer science. Her research is focused on



the design and understanding of mechanism of action of various surface treatments (biomimetic coatings, plasma deposits, layer-by-layer and sol-gel coatings, etc.), mainly for flame retardant, antifouling and biomedical applications. She has extended her research to the study of the functional durability and life cycle analysis of the coatings she develops. She is looking at potential solutions to overcome these aging issues, and to improve their environmental print. In particular, she works on the development of eco-efficient self-stratifying coatings for high-added value applications. In 2019, she was invited to join the “Institut Universitaire de France” (IUF) as a junior member. This rewarded her research in surface treatment engineering. For the record, only 2% of French professors are selected in this way for research excellence.

Dr. Jimenez has published more than 110 papers in peer-reviewed journals, with an h-index of 34. She manages many industrial and academic projects and has research collaborations in various countries like the USA, Luxembourg, Canada, Spain, Malaysia, Australia, China, and others. She is also promoting gender equality in sciences, notably as a member of various associations that encourage high school female students to study sciences. In that frame, she has been selected in 2023 as a scientific ambadress for the L’Oreal Foundation’s “Girls in science” program. Finally, with the association “Femmes et Sciences,” she initiated in 2022 a mentoring program dedicated to female PhD students in Lille University.



**Gregory C. Rutledge** is the Lamot du Pont Professor of Chemical Engineering at the Massachusetts Institute of Technology (MIT) and the Lead PI for MIT in AFFOA, a Manufacturing Innovation Institute focused on functional fibers and fabrics. His research centers on the molecular engineering of soft matter and examines relationships between processing, structure and properties of polymers. His expertise includes both computations and experiments. His group has been instrumental in the development of molecular level modeling of polymer crystals, crystallization kinetics, and the structure and properties of semicrystalline materials. Most recently, his group has developed a molecularly detailed, multiscale model of flow-induced crystallization that accounts for both the dependence of crystallization kinetics on orientation and the evolution of viscoelasticity as the crystallite network grows. Since 2001 he and his coworkers have published extensively on the fabrication, properties and applications of ultrafine polymer fibers formed by electrospinning, with a particular focus recently on the use of these materials as microfilters for separations involving solid aerosols and liquid emulsions. As part of the Massachusetts Manufacturing Emergency Response Team (M-ERT), his laboratory played a role in protecting medical and first responders in the Commonwealth during the COVID-19 pandemic. Prof. Rutledge served as Director of the Program in Polymer Science and Technology and as Executive Officer in the Department of Chemical Engineering at MIT. He is a Fellow of the American Institute of Chemical Engineers (AIChE), the American Physical Society, and the Polymer Materials Science and Engineering Division of the American Chemical Society. He is a recipient of AIChE Braskem Award for Excellence in Materials Engineering and Science and the Founders Award of the Fiber Society. He was honored as the H.A. Morton

Distinguished Visiting Professor in Polymer Science at the University of Akron, and a Thinker in Residence at Deakin University in Geelong, Australia. Prof. Rutledge is the author or co-author of over 200 papers in archival journals and co-inventor on 17 patents. According to Google Scholar (Oct 2, 2023), his h-index is 77, with over 29,000 citations.



**Jean-François Gohy** is currently the Head of the Institute of Condensed Matter and Nanosciences (IMCN) at the Catholic University of Louvain (UCLouvain) in Belgium. Broadly speaking, his research is focused on functional (co)polymers. After a PhD at the University of Liège (Belgium) under the supervision of Prof. Robert Jérôme and a post-doc at the Eindhoven University of Technology (The Netherlands) with Prof. Ulrich Schubert, he started his own research in 2003 as Professor at UCLouvain, focusing on functional nanostructured materials obtained from supramolecular block copolymers. The main targeted applications were stimuli-responsive micellar nanocontainers for the encapsulation/release of molecules of interests and nanoporous membranes. To this aim, he developed the synthesis of well-defined pH, ionic strength and light responsive block copolymer architectures, using controlled radical polymerization techniques. He also used metal–ligand interactions to develop responsive metallo-supramolecular block copolymers. More recently, Prof. Gohy started to develop polymers for energy application focusing on nitroxide-containing polymers for organic radical batteries and made a ground-breaking discovery by developing their hybrids with inorganic materials. Currently, his main works are devoted to solid polymer electrolytes for Li-metal batteries. His works are highlighted in *Nature*, *Advanced Materials*, *Angewandte Chemie*, *The Journal of the American Chemical Society*, *Scientific Reports*, etc., and in several major newspapers and news telecasts in Belgium. He holds 4 patents and

has published more than 230 journal papers, with an h-index of 62 and 14,000 citations. Prof. Gohy participated in several large European collaborative project and was coordinating the STIPOMAT (STImuli-responsive POLymeric MATerials) EU project with partners from 10 EU countries. He was part-time Professor at the Eindhoven University of Technology from 2008 to 2010, invited Professor at the University of Bordeaux in 2008 and 2019, visiting Professor at Aachen University in 2018–2019 and President of the Belgian Polymer Group from 2019 to 2021.



**Mohammad Naraghi** is currently an associate professor and associate department head for academic affairs in the Department of Aerospace Engineering, Texas A&M University. Broadly speaking, Dr.

Naraghi's research is on processing and characterization of polymer-based nanocomposites and polymer-derived ceramics. He has been one of the leading figures in developing carbon-based nanomaterials from polymers via pyrolysis and application of nanomechanics to carbon-based nanomaterials. Naraghi is the recipient of TEES Faculty Fellow Award, 2022–2023, which was created by Texas A&M Engineering Experiment Station (TEES) to recognize outstanding individual research performance and encourage the continued development of exceptional initiatives. Naraghi holds several US patents and invention disclosures, and he has been the author of more than 70 Journal articles, with h-index of 34 and i10-index of 55. Naraghi is also the chair of the International Symposium of MEMS and Nanotechnology of the Society of Experimental Mechanics.

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