

Dr. Craig Jon Hawker

Date of Birth: January 11, 1964
Toowoomba, Australia

Research Interests: *Synthetic Polymer Chemistry, Nanotechnology--Materials science that integrates fundamental studies with the development of nanostructured materials for advanced properties and functions in microelectronics and biotechnology*

Professional History:

2013-present	Director, California Nanosystems Institute University of California, Santa Barbara
2013-present	Clarke Professor University of California, Santa Barbara
2011-present	Director, Dow Materials Institute University of California, Santa Barbara
2011-2014	KFUPM Chair Professor, King Fahd University of Petroleum and Minerals, Saudi Arabia
2010-present	Alan and Ruth Heeger Chair in Interdisciplinary Science University of California, Santa Barbara
2004-2016	Director and Co-Director of Materials Research Laboratory Professor of Materials, Chemistry and Biochemistry University of California, Santa Barbara
1993-2004	Research Staff Member, IBM Almaden Research Center
2001-present	Honorary Professor School of Chemistry and Molecular Biosciences University of Queensland
1990-1993	Queen Elizabeth II Research Fellow, University of Queensland

Education:

- 1988-1990** Post-doctoral Research Associate, Cornell University
Supervisor: *Professor J.M.J. Fréchet*
- 1985-1988** Ph.D. Degree, University of Cambridge, U.K.
Supervisor: *Professor Sir A.R. Battersby*
Thesis title: *Biosynthesis of Vitamin B₁₂ - Model Studies on the Spiro Intermediate*
- 1981-1984** B.Sc. (1st Class Honors), University of Queensland

Awards:

- 2017 Charles G. Overberger International Prize for Excellence in Polymer Research
- 2016 Belgian Polymer Award
- 2016 Elected Member of the National Academy of Inventors
- 2015 Elected as Fellow: American Association for the Advancement of Science (AAAS)
- 2013 ACS Award in Polymer Chemistry, American Chemical Society
- 2013 Elected Fellow, Royal Society of Chemistry
- 2012 Centenary Prize, Royal Society of Chemistry
- 2011 KFUPM Chair Professor, King Fahd University of Petroleum and Minerals, Saudi Arabia
- 2011 Arthur C. Cope Scholar, American Chemical Society
- 2010 Elected Fellow, American Chemical Society
- 2010 Elected, Fellow of the Royal Society
- 2010 Polymer Division Fellow, American Chemical Society
- 2010 Macro Group UK International Medal for Outstanding Achievement
- 2009 PMSE Fellow, American Chemical Society
- 2008 DSM – International Performance Materials Award, IUPAC
- 2007 Mark Scholar Award, American Chemical Society
- 2006 IBM Research Division Award
- 2005 Dutch Polymer Award, Dutch Chemical Institute
- 2005 ACS Award in Applied Polymer Science, American Chemical Society
- 2004 Industrial Scientist Award, American Chemical Society
- 2003 Co-operative Research Award, American Chemical Society
- 2002 IBM Corporate Technical Recognition Award
- 2001 Carl S. Marvel Award in Creative Polymer Science, American Chemical Society
- 2000 Young Scientists Award, IUPAC

1999 Patent Invention Award, IBM Corporation
 1997 Arthur K. Doolittle Award, American Chemical Society
 1997 Patent Invention Award, IBM Corporation
 1995 Innovation Award, IBM Corporation
 1993 Rennie Memorial Medal, Royal Australian Chemical Institute
 1992 Research Award, Australian Research Council
 1991 Treloar Prize, Polymer Division, Royal Australian Chemical Institute
 1990 Queen Elizabeth II Research Fellowship, Australian Research Council
 1985-1988 Ribbands Scholar, Wolfson College, University of Cambridge
 1985-1988 1851 Research Scholarship, Royal Commission for the Exhibition of 1851
 1985-1988 Overseas Research Scheme Award, S.E.R.C.
 1988 Science Fellow, Harkness Fellowships
 1985 Commonwealth Scholarship and Fellowship Award, British Council
 1985 Masson Memorial Medal, Royal Australian Chemical Institute
 1985 University Medal, University of Queensland
 1984 Poole Award, University of Queensland
 1984 CSR Chemicals Prize, University of Queensland
 1983 Douglas McNaughton Scholarship, University of Queensland
 1983 T.G.H. Jones Scholarship, University of Queensland
 1982 Edward Taylor Memorial Prize, University of Queensland
 1981 Chemistry Prize, University of Queensland

Named Lecturerships:

2017 Dauben Lecturer, University of Washington
 2017 Aldrich Lecturer, University of Colorado, Boulder
 2016 Nova Lecturer, Canadian High Polymer Conference
 2016 Patterson Lectureship, University of Western Ontario
 2016 Kurt Wohl Memorial Lectureship, University of Delaware
 2016 Jean Dreyfus Boissevain Lecturer, Western Washington University
 2015 Dow Lecturer, Northwestern University
 2015 Sproull Lecturer, Cornell University
 2015 Purves Lecturer, McGill University
 2015 The Grandpierre Lecturer, Columbia University
 2015 Eli Lilly Distinguished Lecturer, Colorado State University
 2015 Pettit Lecturer, University of Texas, Austin
 2014 Bridgestone Distinguished Lecturer, Case Western Reserve University
 2014 Richard T. Arnold Lecturer, Southern Illinois University
 2014 William G. Dauben Lecturer, University of California, Berkeley
 2014 McGavock Lectureship, Trinity University
 2014 Peter Timms Lecturer, University of Bristol, UK
 2013 Otto Warburg Lecturer, University of Bayreuth, Germany
 2013 Gassman Lecturer, University of Minnesota
 2013 MacLean Lecturer, McMaster University
 2012 CPE Lecturer, Imperial College of Science and Technology, UK
 2012 Merck-Karl Pfister Lecturer, MIT

2012 Marker Lecturer, Pennsylvania State University
 2012 Eastman Lecturer, University of Akron
 2011 Class of '60 Lecturer, Williams College
 2011 Commencement Speaker, University of California, Santa Barbara
 2010 Bayer Lecturer, University of Southern Mississippi
 2010 RSC Chemical Sciences Lecturer, UK
 2010 Moses Gomberg Lecturer, University of Michigan
 2007 Humphrey Memorial Lecturer, University of Vermont
 2006 Proctor & Gamble Lecturer, Wright State University
 2006 Dillion Steele Lecturer, University of Queensland, Australia
 2006 IMS Distinguished Lecturer, University of Connecticut
 2005 Murtiashaw Lecturer, University of South Carolina
 2005 Discovery Lecturer, DuPont Central Research
 2005 Frontiers Lecturer, Department of Chemistry, Texas A&M University.
 2004 Victor M. Chambers Memorial Lecturer, Department of Chemistry, University of Rochester
 2004 Cherry Emerson Jr. Lecturer, Department of Chemistry, Georgia Institute of Technology
 2003 Bayer-Stein Lecturer, Department of Chemistry, University of Massachusetts, Amherst
 2002 Whitby Memorial Lecturer, Department of Polymer Science, University of Akron
 2002 Inaugural Cornforth Lecturer, Department of Chemistry, University of Sydney, Australia
 2002 Melville Lecturer, Department of Chemistry, University of Cambridge, UK
 1999 Rauscher Lecturer, Rensselaer Polytechnic Institute, NY
 1998 Carothers Lecturer, DuPont Central Research

Professional Activities:

- Editor, Journal of Polymer Science
- International Editorial Board, Angewandte Chemie International Edition
- Editorial Board, Chemical Communications
- Editorial Board, ACS Combinatorial Science
- Editorial Board, Polymer Bulletin
- Editorial Board, International Journal of Polymeric Materials
- Editorial Board, Progress in Polymer Science
- Editorial Board, Journal of Nanotechnology, Science and Applications
- Editorial Board, Current Opinion in Solid State and Materials Science
- Chair, 2003 Polymers (East) Gordon Research Conference
- Adjunct Professor of Chemistry, University of Queensland
- Royal Australian Chemical Institute, Member
- Member, Polymer Division, Royal Australian Chemical Institute

- U.S.A. Representative, International Relations Committee, RACI

Advisory Boards and Consulting:

- Co-Inventor, Advisor Olaplex LLC and Liqwd (2013-present)
- Scientific Advisory Board, Tricida (2013-present)
- Scientific Advisory Board, Relypsa (2007-2013, 2015-present)
- Scientific Advisory Board, Amgen (2007)
- Scientific Advisory Board, Ilypsa Therapeutics (2007)
- Scientific Advisory Board, Intezyne Inc. (2005-2011)
- Technical Advisory Board, Intermolecular Inc. (2005-2015)
- Technical Advisory Board, Mitsubishi Chemical Company (2004-2006)
- Scientific Advisory Board, Warwick Effect Polymers (2003-2011)
- Scientific Advisory Board, SYMYX Technologies (1997-2003)
- Scientific Advisory Board, MicroBar Technologies (1998-2001)

- Scientific Advisory Board, Molecular Foundry, Lawrence Berkeley National Laboratory (2005-present)
- Scientific Advisory Board, Australian Institute for Bioengineering and Nanotechnology (2004-present)
- Scientific Advisory Board, MIT Institute for Soldier Nanotechnologies (2004-2012)
- Scientific Advisory Board, NSEC, University of Wisconsin, Madison (2003-2012)
- Advisory Board, Materials Research Laboratory, University of Illinois (2006-present)

Publications:

491. Fleischmann, C.; Anastasaki, A.; Gutekunst, W.R.; McGrath, A.J.; Hustad, P.D.; Clark, P.G.; Laitar, D.S.; Hawker, C.J., "Direct Access to Functional (Meth)Acrylate Copolymers Through Transesterification with Lithium Alkoxides" *J. Polym. Sci., Polym. Chem.*; **2017**, *55*, 1566-1574, DOI: 10.1002/pola.28524.
490. Murakami, T.; Schmidt, B.V.K.J.; Brown, H.R.; Hawker, C.J., "Structural Versatility in Slide-Ring Gels: Influence of Co-Threaded Cyclodextrin Spacers", *J. Polym. Sci., Polym. Chem.*; **2017**, *55*, 1156-1165, DOI: 10.1002/pola.28490.
489. Schmidt, B.V.K.J.; Kugele, D.; von Irmer, J.; Steinkoenig, J.; Mutlu, H.; Ruttiger, C.; Hawker, C.J.; Gallei, M.; Barner-Kowollik, C., "Dual-Gated Supramolecular Star Polymers in Aqueous Solution", *Macromolecules*, **2017**, *50*, 2375-2386, DOI: 10.1021/acs.macromol.7b00165.
488. Page, Z.A.; Chiu, C.Y.; Narupai, B.; Laitar, D.S.; Mukhopadhyay, S.; Sokolov, A.; Hudson, Z.M.; Zerdan, R.B.; McGrath, A.J.; Kramer, J.W.; Hawker, C.J., "Highly Photoluminescent Nonconjugated Polymers for Single-Layer Light

- Emitting Diodes”, *ACS Photonics*, **2017**, *4*, 631-641, DOI: 10.1021/acsp Photonics.6b00994.
487. Diaz, Y.J.; Page, Z.A.; Knight, A.S.; Treat, N.J.; Hemmer, J.R.; Hawker, C.J.; de Alaniz, J.R., “A Versatile and Highly Selective Colorimetric Sensor for the Detection of Amines”, *Chem. – Eur. J.*, **2017**, *23*, 3562-3566, DOI: 10.1002/chem.201700368.
486. Page, Z.A.; Zerdan, R.B.; Gutekunst, W.R.; Anastasaki, A.; Seo, S.; McGrath, A.J.; Lunn, D.J.; Clark, P.G.; Hawker, C.J., “A di-tert-butyl acrylate monomer for controlled radical photopolymerization”, *J. Polym. Sci., Polym. Chem.*; **2017**, *55*, 801-807, DOI: 10.1002/pola.28443.
485. Whitfield, R.; Anastasaki, A.; Nikolaou, V.; Jones, G.R.; Engelis, N.G.; Discekici, E.H.; Fleischmann, C.; Willenbacher, J.; Hawker, C.J.; Haddleton, D.M., “Universal Conditions for the Controlled Polymerization of Acrylates, Methacrylates, and Styrene via Cu(0)-RDRP”, *J. Am. Chem. Soc.*, **2017**, *139*, 1003-1010, DOI: 10.1021/jacs.6b11783.
484. Discekici, E.H.; Shankel, S.L.; Anastasaki, A.; Oschmann, B.; Lee, I.H.; Niu, J.; McGrath, A.J.; Clark, P.G.; Laitar, D.S.; de Alaniz, J.R.; Hawker, C.J. “Dual-pathway chain-end modification of RAFT polymers using visible light and metal-free conditions”, *Chem. Commun.*, **2017**, *53*, 1888-1891. DOI: 10.1039/c6cc08370f.
483. Anastasaki, A.; Willenbacher, J.; Fleischmann, C.; Gutekunst, W.R.; Hawker, C.J. “End group modification of poly(acrylates) obtained via ATRP: a user guide”, *Polym. Chem.*, **2017**, *8*, 689-697, DOI: 10.1039/c6py01993e.
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481. Pester, C.W.; Narupai, B.; Mattson, K.M.; Bothman, D.P.; Klinger, D.; Lee, K.W.; Discekici, E.H.; Hawker, C.J. “Engineering Surfaces through Sequential Stop-Flow Photopatterning”, *Adv. Mater.*, **2016**, *28*, 9292-9296, DOI: 10.1002/adma.201602900.
480. Lee, J.; McGrath, A.J.; Hawker, C.J.; Kim, B.S. “pH-Tunable Thermoresponsive PEO-Based Functional Polymers with Pendant Amine Groups”, *ACS Macro Letters*, **2016**, *5*, 1391-1396. DOI: 10.1021/acsmacrolett.6b00830.
479. Fong, F.Y.; Oh, S.S.; Hawker, C.J.; Soh, H.T. “In Vitro Selection of pH-Activated DNA Nanostructures”, *Angew. Chem. Int. Ed.* **2016**, *55*, 15258-15262, DOI: 10.1002/anie.201607540.
478. Kim, S.; Li, W.; Fredrickson, G.H.; Hawker, C.J.; Kramer, E.J., “Order-disorder transition in thin films of horizontally-oriented cylinder-forming block copolymers: thermal fluctuations vs. preferential wetting”, *Soft Matter*, **2016**, *12*, 5915-5925, DOI: 10.1039/c6sm00739b.
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476. Minehara, H.; Pitet, L.M.; Kim, S.; Zha, R.H.; Meijer, E.W.; Hawker, C.J., “Branched Block Copolymers for Tuning of Morphology and Feature Size in

- Thin Film Nanolithography”, *Macromolecules*, **2016**, *49*, 2318-2326, DOI: 10.1021/acs.macromol.5b02649.
475. Mattson, K.M.; Pester, C.W.; Gutekunst, W R.; Hsueh, A.T.; Discekici, E.H.; Luo, Y.D.; Schmidt, B.V.K.J.; McGrath, A.J.; Clark, P.G.; Hawker, C.J., “Metal-Free Removal of Polymer Chain Ends Using Light”, *Macromolecules*, **2016**, *49*, 8162-8166. DOI: 10.1021/acs.macromol.6b01894.
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473. Woodard, P.K.; Liu, Y.J.; Pressly, E.D.; Luehmann, H.P.; Detering, L.; Sultan, D.E.; Laforest, R.; McGrath, A.J.; Gropler, R.J.; Hawker, C.J., “Design and Modular Construction of a Polymeric Nanoparticle for Targeted Atherosclerosis Positron Emission Tomography Imaging: A Story of 25% Cu-64-CANF-Comb”, *Pharmaceutical Research*, **2016**, *33*, 2400-2410. DOI: 10.1007/s11095-016-1963-8
472. Luo, Y.D.; Kim, B.; Montarnal, D.; Mester, Z.; Pester, C.W.; McGrath, A.J.; Hill, G.; Kramer, E.J.; Fredrickson, G.H.; Hawker, C.J. “Improved Self-Assembly of Poly(dimethylsiloxane-b-ethylene oxide) Using a Hydrogen-Bonding Additive” *J. Polym. Sci., Polym. Chem.*; **2016**, *54*, 2200-2208. DOI: 10.1002/pola.28093
471. Poelma, S.O.; Burnett, G.L.; Discekici, E.H.; Mattson, K.M.; Treat, N.J.; Luo, Y.D.; Hudson, Z.M.; Shankel, S.L.; Clark, P.G.; Kramer, J.W.; Hawker, C.J.; de Alaniz, J.R. “Chemoselective Radical Dehalogenation and C-C Bond Formation on Aryl Halide Substrates Using Organic Photoredox Catalysts”, *J. Org. Chem.*, **2016**, *81*, 7155-7160. DOI: 10.1021/acs.joc.6b01034
470. Narupai, B.; Poelma, J.E.; Pester, C.W.; McGrath, A.J.; Toumayan, E.P.; Luo, Y.D.; Kramer, J.W.; Clark, P.G.; Ray, P.C.; Hawker, C.J. “Hierarchical Comb Brush Architectures via Sequential Light-Mediated Controlled Radical Polymerizations”, *J. Polym. Sci., Polym. Chem.*; **2016**, *54*, 2276-2284. DOI: 10.1002/pola.28128
469. Wang, C.X.; Utech, S.; Gopez, J.D.; Mabesoone, M.F.J.; Hawker, C.J.; Klinger, D. “Non-Covalent Microgel Particles Containing Functional Payloads: Coacervation of PEG-Based Triblocks via Microfluidics”, *ACS Appl. Mater. & Interfaces*, **2016**, *8*, 16914-16921. DOI: 10.1021/acsami.6b03356
468. Luehmann, H.P.; Detering, L.; Fors, B.P.; Pressly, E.D.; Woodard, P.K.; Randolph, G.J.; Gropler, R.J.; Hawker, C.J.; Liu, Y.J. “PET/CT Imaging of Chemokine Receptors in Inflammatory Atherosclerosis Using Targeted Nanoparticles”, *J. Nucl. Med.*, **2016**, *57*, 1124-1129. DOI: 10.2967/jnumed.115.166751
467. Handa, N.V.; Li, S.G.; Gerbec, J.A.; Sumitani, N.; Hawker, C.J.; Klinger, D. “Fully Aromatic High Performance Thermoset via Sydnone-Alkyne Cycloaddition”, *J. Am. Chem. Soc.*, **2016**, *138*, 6400-6403.
466. Ku, K.H.; Shin, J.M.; Klinger, D.; Jang, S.G.; Hayward, R.C.; Hawker, C.J.; Kim, B.J., “Particles with Tunable Porosity and Morphology by Controlling Interfacial Instability in Block Copolymer Emulsions”, *ACS NANO*, **2016**, *10*, 5243-5251.

465. Lawrence, J.; Lee, S.H.; Abdilla, A.; Nothling, M.D.; Ren, J.M.; Knight, A.S.; Fleischmann, C.; Li, Y.L.; Abrams, A.S.; Schmidt, B.V.K.J.; Hawker, M.C.; Connal, L.A.; McGrath, A.J.; Clark, P.G.; Gutekunst, W.R.; Hawker, C.J. "A Versatile and Scalable Strategy to Discrete Oligomers", *J. Am. Chem. Soc.*, **2016**, *138*, 6306-6310.
464. Clevenger, T.N.; Hinman, C.R.; Rubin, R.K.A.; Smither, K.; Burke, D.J.; Hawker, C.J.; Messina, D.; Van Epps, D.; Clegg, D.O., "Vitronectin-Based, Biomimetic Encapsulating Hydrogel Scaffolds Support Adipogenesis of Adipose Stem Cells", *Tissue Engineering Part A*, **2016**, *22*, 597-609.
463. Murakami, T.; Brown, H.R.; Hawker, C.J. "One-Pot Fabrication of Robust Interpenetrating Hydrogels via Orthogonal Click Reactions", *J. Polym. Sci., Polym. Chem.*; **2016**, *54*, 1459-1467.
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460. Discekici, E.H.; Pester, C.W.; Treat, N.J.; Lawrence, J.; Mattson, K.M.; Narupai, B.; Toumayan, E.P.; Luo, Y.D.; McGrath, A.J.; Clark, P.G.; de Alaniz, J.R.; Hawker, C.J., "Simple Benchtop Approach to Polymer Brush Nanostructures Using Visible-Light-Mediated Metal-Free Atom Transfer Radical Polymerization", *ACS Macro Letters*, **2016**, *5*, 258-262.
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456. Pester, C.W.; Poelma, J.E.; Narupai, B.; Patel, S.N.; Su, G.M.; Mates, T.E.; Luo, Y.; Ober, C.K.; Hawker, C.J.; Kramer, E.J., "Ambiguous Anti-Fouling Surfaces: Facile Synthesis by Light-Mediated Radical Polymerization" *J. Polym. Sci., Polym. Chem.*; **2016**, *54*, 253-258.
455. Hartmeier, B.F.; Brady, M.A.; Treat, N.D.; Robb, M.J.; Mates, T.E.; Hexemer, A.; Wang, C.; Hawker, C.J.; Kramer, E.J.; Chabinyc, M.L., "Significance of Miscibility in Multidonor Bulk Heterojunction Solar Cells" *J. Polym. Sci., Polym. Phys.*; **2016**, *54*, 237-246.

454. Shi, Y.L.; Pramanik, A.; Tchounwou, C.; Pedraza, F.; Crouch, R.A.; Chavva, S.R.; Vangara, A.; Sinha, S.S.; Jones, S.; Sardar, D.; Hawker, C.J.; Ray, P.C. "Multifunctional Biocompatible Graphene Oxide Quantum Dots Decorated Magnetic Nanoplatfom for Efficient Capture and Two-Photon Imaging of Rare Tumor Cells", *ACS Appl. Mat. Inter.* **2015**, *7*, 10935-10943. DOI: 10.1021/acsami.5b02199
453. Discekici, E.H.; Treat, N.J.; Poelma, S.O.; Mattson, K.M.; Hudson, Z.M.; Luo, Y.D.; Hawker, C.J.; de Alaniz, J.R., "A highly reducing metal-free photoredox catalyst: design and application in radical dehalogenations", *Chem. Commun.*, **2015**, *51*, 11705-11708. DOI: 10.1039/c5cc04677g
452. Luo, Y.D.; Montarnal, D.; Treat, N.J.; Hustad, P.D.; Christianson, M.D.; Kramer, E.J.; Fredrickson, G.H.; Hawker, C.J., "Enhanced Block Copolymer Phase Separation Using Click Chemistry and Ionic Junctions" *ACS MacroLetters* **2015**, *4*, 1332-1336.
451. Kang, T.; Oh, D.X.; Heo, J.; Lee, H.K.; Choy, S.; Hawker, C.J.; Hwang, D.S., "Formation, Removal, and Reformation of Surface Coatings on Various Metal Oxide Surfaces Inspired by Mussel Adhesives" *ACS Appl. Mat. Inter.* **2015**, *7*, 24656-24662.
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442. Luo, Y.D.; Montarnal, D.; Kirn, S.; Shi, W.C.; Barteau, K.P.; Pester, C.W.; Hustad, P.D.; Christianson, M.D.; Fredrickson, G.H.; Kramer, E.J.; Hawker, C.J.,

- “Poly(dimethylsiloxane-*b*-methyl methacrylate): A Promising Candidate for Sub-10 nm Patterning”, *Macromolecules*, **2015**, *48*, 3422-3430.
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439. Shi, W.C.; McGrath, A.J.; Li, Y.L.; Lynd, N.A.; Hawker, C.J.; Fredrickson, G.H.; Kramer, E.J. “Cooperative and Sequential Phase Transitions in *it*-Poly(propylene oxide)-*b*-poly(ethylene oxide)-*b*-*it*-poly(propylene oxide) Triblock Copolymers”, *Macromolecules*, **2015**, *48*, 3069-3079.
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