

Curriculum Vitae

Dr J Fraser Stoddart / Board of Trustees Professor of Chemistry / Northwestern University

Born May 24, 1942, Edinburgh, Scotland **Nationality** US **Email** stoddart@northwestern.edu
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Address Department of Chemistry, Northwestern University, 2145 Sheridan Road, Evanston, IL 60208, USA

Academic Career

2018– Visiting Professor of Chemistry at University of New South Wales / Australia
2014– Thousand Talent Scholar at Tianjin University / China
2014– Chief Technical Officer at Cycladex
2014– Chief Technical Officer and Board Member at PanaceaNano
2010–2017 Director of the Center for the Chemistry of Integrated Systems at Northwestern University
2008– Board of Trustees Professor of Chemistry at Northwestern University
2003–2007 Fred Kavli Chair in NanoSystems Sciences at University of California, Los Angeles
1997–2003 Saul Winstein Chair in Organic Chemistry at University of California, Los Angeles
1993–1997 Head of School of Chemistry at University of Birmingham, UK
1990–1997 Professor of Organic Chemistry at University of Birmingham, UK
1981–1990 Reader in Chemistry at University of Sheffield, UK
1978–1981 On secondment to ICI Corporate Laboratory, Runcorn, UK
1970–1978 Lecturer in Chemistry at University of Sheffield, UK
1970 ICI Research Fellowship in Chemistry at University of Sheffield, UK
 Advisor: David Ollis FRS (deceased)
1967–1970 NRC Postdoctoral Fellowship at Queen’s University, Kingston, Canada
 Advisor: Ken Jones FRS (deceased)
1964–1966 DSIR Postgraduate Studentship at University of Edinburgh, UK
 PhD Advisors: Sir Edmund Hirst FRS and Douglas Anderson (both deceased)
1960–1964 BSc Honours Chemistry, University of Edinburgh, UK

Honors (since 1994)

2019 Honorary Doctor Degree (University of Brasilia)
2019 Science and Technology Cooperative Award (Chinese Government)
2018 Honorary Doctor of Science Degree (University of Southern Denmark)
2018 Honorary Doctor Degree (Yerevan State Medical University)
2018 Fellowship of the Royal Society of New South Wales
2018 Honorary Membership of the European Academy of Sciences and Arts
2018 Foreign Membership of the Chinese Academy of Sciences
2017 Membership of the EU Academy of Sciences
2017 Honorary Doctor of Science Degree (University of Nottingham)
2017 Great Immigrants for 2017 (Carnegie Corporation of New York)
2015 Honorary Professorship (University of Nottingham, UK)
2014 Membership of the National Academy of Sciences, USA
2013 Honorary Professorship (Jilin University, China)
2012 Fellowship of the American Academy of Arts and Sciences, USA
2011 Honorary Fellowship of the Royal Society of Chemistry, UK
2010 Honorary Doctor of Science Degree (St Andrews University, UK)
2010 Honorary Doctor of Science Degree (Trinity College Dublin, Ireland)
2009 Honorary Doctor of Science Degree (University of Sheffield, UK)
2008 Honorary Fellowship of the Royal Society of Edinburgh, UK
2007 Appointed Knight Bachelor by HM Queen Elizabeth II
2006 Honorary Doctor of Science Degree (University of Twente, The Netherlands)
2005 Fellowship of the American Association for the Advancement of Science, USA
2005 Honorary Doctor of Science Degree (University of Birmingham, UK)
2005 Honorary Professorship (East China University of Science and Technology)
2005 Carnegie Centenary Professorship of the Universities of Scotland, UK

1999	Fellowship of the German Academy (Leopoldina) of Natural Sciences
1998	Humboldt Fellowship, Germany
1994	Fellowship of the Royal Society of London, UK

Awards and Prizes and Medals (since 1993)

2017	Second Netherlands Award for Supramolecular Chemistry
2017	Scottish Innovation Award (Baird of Bute Society)
2016	Nobel Prize in Chemistry (Royal Swedish Academy of Sciences)
2014	Centenary Prize from the Royal Society of Chemistry, UK
2014	Alan G MacDiarmid Medal (University of Pennsylvania)
2014	Thomson-Reuters Highly Cited Researcher in Chemistry
2013	IChemE North America Chemical Engineering Project of the Year Award
2012	Distinguished Citizen Award, Illinois Saint Andrew Society, Chicago, USA
2010	Undergraduate Chemistry Council Teacher of the Year Award (Northwestern University)
2010	Royal Medal of the Royal Society of Edinburgh presented by Prince Philip, Duke of Edinburgh
2010	International Society for Nanoscale Science, Computation and Engineering Award
2008	Davy Medal of the Royal Society of London
2008	Arthur C Cope Award (American Chemical Society)
2007	Feynman Prize in Nanotechnology (Experimental)
2007	Albert Einstein World Prize in Science
2007	Tetrahedron Prize for Creativity in Organic Chemistry
2007	Jabir Ibn Hyyan (Geber) Medal (Saudi Chemical Society)
2007	King Faisal International Prize in Science
2006	Fuson Award (University of Nevada)
2006	Mack Memorial Award (Ohio State University)
2005	University of Edinburgh Alumnus of the Year 2005 Award
2004	Nagoya Gold Medal in Organic Chemistry
2001	Herbert Newby McCoy Award (UCLA)
1999	Arthur C Cope Scholar Award (American Chemical Society)
1995	Adolf Steinhöfer Foundation Award (University of Kaiserslautern, Germany)
1994	Claire Bruylants Award (University of Louvaine-La-Neuve, Belgium)
1993	International Izatt-Christensen Award in Macrocyclic Chemistry

Selected Named Lectures and Presentations > 1000 Keynote / Plenary / Invited lectures at national / international conferences, university colloquia and industrial organizations over the past 40 years including the following named lectures: *Frank C Mathers Lectureship: Indiana University (2019)* • *2019 Wallace H Coulter Lecture: Pittsburgh Conference (2019)* • *2018 Mitchum E Warren Jr Lecture in Chemistry: Vanderbilt University (2018)* • *Howard Nobel Lectureship: University of New South Wales (2018)* • *Yang Shixian Forum: Nankai University (2018)* • *Centennial Lectureship: University of Texas, El Paso (2018)* • *Inaugural Walter A Szarek Lectureship: Queen's University/Canada (2018)* • *President's Lectureship: University of Montana (2018)* • *Makhlouf Haddadin Lectureship: American University of Beirut (2018)* • *University of Padua: Galileo Lectureship (2017)* • *Virginia Tech: Friends of Larry Taylor Lectureship (2017)* • *NTU: Nanyang Chemistry Distinguished Lectureship (2017)* • *University of Sheffield: Krebs Lecture (2017)* • *Zhejiang University: Zhu Kezhen Distinguished Lectureship (2017)* • *Chemical Heritage Foundation: Ulliyot Public Lecture (2016)* • *Royal Society of Chemistry: Haworth Memorial Lecture (2016)* • *University of Durham: The Durham Lectures (2016)* • *Duke University: Douglas Hill Memorial Lecture (2016)* • *University of Pennsylvania, Philadelphia: MacDiarmid Medal Lecture (2015)* • *University of Texas, Austin: Vista Lecturer (2014)* • *University of California, Berkeley: Dauben Lecturer (2014)* • *Australian National University: Birch Lecturer (2013)* • *University of Iowa: Wawzonek Lecturer (2013)* • *University of Alabama: Cava Lecturer (2013)* • *Dartmouth College: Henry Dreyfus Chemistry Lecturer (2013)* • *Allegheny College: Lord Lecturer (2012)* • *McMaster University: MacLean Lecturer (2012)* • *Queen's University (Canada): Jones Lecturer (2012)* • *Stony Brook University: Bigeleisen Lecturer (2012)* • *McGill University: Aggarwal Lecturer (2010)* • *John Innes Centre, Norwich, UK: Chatt Lecturer (2009)* • *University of New Orleans: Davis Memorial Lecturer (2009)* • *University of Manitoba: Armes Lecturer (2009)* • *University of West Florida: Smart Lecturer (2008)* • *Georgia Institute of Technology: Sherry Memorial Lecturer (2008)* • *Appalachian State University: Morgan Science Lecturer (2008)* • *Baylor University: Gooch-Stephens Lecturer (2008)* • *Illinois Institute of Technology: Kilpatrick Lecturer (2008)*

Administrative Responsibilities

(1) Northwestern University

2012–2016	Chair of the Faculty Honors Committee in Chemistry
2012–Present	Member of the Department of Chemistry Space Committee
2010–2012	Member of the Senior Hire Search Committee in Chemistry
2010–Present	Director of the Center for the Chemistry of Integrated Systems
2008–2012	Member of Robert H Lurie Comprehensive Cancer Center
2008–Present	Member of Institute of BioNanotechnology in Medicine
2008–Present	Member of the International Institute for Nanotechnology
2008–2012	Member of the Faculty Honors Committee in Chemistry

(2) University of California at Los Angeles (UCLA)

2004–2007	Member of the Materials Creation Training Program
2004–2007	Member of the Research Advisor Council for UCLA
2003–2007	Director of the California NanoSystems Institute (CNSI)
2002–2007	Member of the Postdoctoral Advisory Committee
2002–2003	Acting Director of the California NanoSystems Institute (CNSI)
2000–2002	Member of the Board of the California NanoSystems Institute (CNSI)
1998–1999	Member of the Chemistry Departmental Library Committee
1997–2007	Member of the Chemistry Departmental Awards Committee

(3) Birmingham University

1995	Future Vice-Chancellor Selection Board
1992	Postgraduate Prospectus – Vice-Chancellor’s Special Advisor
1993–1997	Chair of the School of Chemistry
1992–1993	Chairman of Chemistry Futures Group
1991–1997	Member of the Science Faculty Research Committee
1991–1994	Chairman of Science Faculty Industrial Liaison Panel
1990–1997	Chair of Organic Chemistry

(4) Sheffield University / ICI Corporate Laboratory

1988–1989	Member of Chemistry Departmental Research Committee
1982–1986	Organic Chemistry Representative of Departmental Study Group on Computing
1981–1984	Chemistry Departmental Representative on the Science Faculty Board
1978–1981	Organizer of the Organic Discussion Group Meetings at ICI Corporate Laboratory
1978–1990	Organic Chemistry Representative on NMR Committee
1974–1977	Organic Chemistry Representative on Staff-Student Committee
1973–1975	Organic Chemistry Representative on Departmental Safety Committee
1972–1973	Organic Chemistry Representative on Departmental Academic Development Committee

Membership/Fellowship of Professional Societies

Royal Society of Chemistry	German Academy (Leopoldina) of Science
American Chemical Society	American Association for the Advancement of Science
Royal Society of London	Royal Netherlands Academy of Arts and Science
Royal Society of Edinburgh	American Academy of Arts and Sciences
Imperial Society of Knights Bachelor	National Academy of Sciences

Editorial Boards and Scientific Committees (since 1990)

2018–Present	Member of Editorial Advisory Board of ChemSystemsChem
2012–Present	Member of International Advisory Board ChemPlusChem
2010–Present	Editor-in-Chief of Applied Nanoscience
2010–Present	Member of International Advisory Board Macromolecular Rapid Communications
2007	Chairman of NSF Chemistry Committee Workshop on Emergent Phenomena
2007–2012	Member of Scientific Advisory Board of Molecular Foundry
2004	Member of the Wolf Prize in Chemistry Committee
2004–2014	Member of ACS Executive Director’s 2020 Committee
2004–Present	Member of International Advisory Board of Chemistry World
2003–2005	Associate Editor of Organic Letters

2003	Member of Scientific Committee of the Nanoworld Institute, University of Geneva
2002–2003	Member of International Board of IUPAC Meeting in Ottawa
2000–2008	Member of Editorial Advisory Board of Crystal Growth and Design
2000	Member of NIH Medicinal Chemistry Study Section
1999	Member of the NSF Inorganic Chemistry CAREER Panel
1999–2005	Member of Editorial Advisory Board of Journal of Organic Chemistry
1999–Present	Member of Editorial Advisory Board of Organic Letters
1997–2012	Member of International Advisory Board of Collection of Czechoslovak Chemical Communications
1996	President of the Chemistry Section of British Association
1995–1997	Member of Scientific Advisory Board of Center for Nanoscale Science and Technology at Rice
1995–2013	Member of the International Advisory Board of Angewandte Chemie
1995–Present	Member of Honorary Board of Chemistry A European Journal
1994–1997	Member of EPSRC Chemistry College
1994–1995	Member of EPSRC / BBSRC Biomolecular Sciences Subcommittee
1994–1997	Chairman of NATO Special Program on Supramolecular Chemistry
1993–1998	Member of Editorial Board of Supramolecular Science
1992–1994	Member of SERC Biomolecular Sciences Subcommittee
1992–1994	Member of SERC Chemistry Committee
1992	Member of SERC Carbohydrate Science Panel
1991–1997	Member of Editorial Board of Synthesis
1991–1993	UK Representative and Assistant Coordinator of European Science and Technology Group
1991–1994	UK Representative on NATO Special Program on Supramolecular Chemistry
1991–1993	Member of SERC Molecular Electronics Committee
1991–1992	Member of SERC Molecular Recognition Initiative Review Panel
1991–1995	Member of Editorial Board of Chemical Society Reviews
1990–1995	Member of Advisory Board of Journal of Materials Chemistry

Professional Advancement of Graduate Students and Postdoctoral Fellows (since 2008)

• **Graduate Student / Postdoctoral Fellowships (since 2008)**

National Science Foundation (NSF) Graduate Research Fellowship

Carson Bruns (2009) • Albert Fahrenbach (2009) • Nathan Strutt (2010) • Alyssa-Jennifer Avestro (2011) • Dennis Cao (2011) • Edward Dale (2013)

National Defense Science and Engineering Graduate (NDSEG) Fellowship

Jonathan Barnes (2011) • Ian Gibbs-Hall (2014)

Fulbright Research Fellowship

Anthea Blackburn (2010) • Paul McGonigal / Postdoc (2012)

Netherlands Organisation for Scientific Research (NWO) Rubicon Fellowship

Michal Juriček / Postdoc (2011)

Northwestern University International Institute for Nanotechnology (IIN) Fellowship

Severin Schneebeli / Postdoc (2011) • Leah Witus / Postdoc (2012) • Zachary Kean / Postdoc (2015)

National Institutes of Health National Research Service Award (NIH NRSA) Fellowship

Leah Witus / Postdoc (2012)

• **Graduate Students to Postdoctoral Fellowships (since 2008)**

Yuping Wang – MIT (Robert Macfarlane)

Alyssa Avestro – University of Durham (1851 Fellow)

Matthew Belowich – Princeton University (David MacMillan)

Jason Spruell – University of California at Santa Barbara (Craig Hawker)

Lei Fang – Stanford University (Zhenan Bao)

Hao Li – University of Texas at Austin (Jonathan Sessler)

Andrew Sue – University of California at Berkeley (Omar Yaghi)

Srinivasan Sampath – Korea Institute of Advanced Science and Technology (Ali Coskun)

Ashish Basuray – Northwestern University (Fraser Stoddart)

Gokhan Barin – Northwestern University (Joseph Hupp) / University of California at Berkeley (Jeffrey Long)

Albert Fahrenbach – Harvard University (Jack Szostak)

Jonathan Barnes – Massachusetts Institute of Technology (Jeremiah Johnson)
Carson Bruns – University of California at Berkeley (Matt Francis)
Dennis Cao – Northwestern University (Sam Stupp)

• **Graduate Students and Postdoctoral Fellows to Industry / Other** (since 2008)

Edward Dale (Intel)	James Henkelis – Dow Chemical
Xisen Hou (Dow Chemical)	Michael Otley – BASF
Matthew Belowich – Dow Chemical	Anthea Blackburn (Econic)
Cory Valente – Dow Chemical	Nicholas Vermeulen – Dow Chemical
Subadeep Basu – Intel	Alexander Shveyd – Intel
Sergio Grunder – Dow Chemical (Switzerland)	Ragnar Stoll – BASF (Germany)
Louisa Esdaile – Dow Chemical	Kaushik Patel – Sigma-Aldrich
Megan Boyle – Dow Chemical	Jason Spruell – Milliken
Travis Gasa – Leydig, Voit & Mayer / Renmatix	Sanjeev Dey – Milliken
Doug Friedman – National Academy of Sciences	Nathan Strutt – Intel
Julien Lehl – Centre National de la Recherche Scientifique (CNRS)	
Henri-Pierre Jacquot de Rouville – Centre National de la Recherche Scientifique (CNRS)	

• **Graduate Students and Postdoctoral Fellows to Assistant Professorships** (since 2008)

Carson Bruns – University of Colorado	Andrew Sue – Tianjin University
Mark Lipke – Rutgers University	Leah Witus – Macalester College
Dennis Cao – Macalester College	Ozgur Bozdemir – Ataturk University
Alshakim Nelson – University of Washington	Yingwei Yang – Jilin University
Paul McGonigal – University of Durham	Sourav Saha – University of Florida
Chenfeng Ke – Dartmouth College	Ivan Aprahamian – Dartmouth University
Dongyang Chen – Fuzhou University	Ross Forgan – University of Glasgow
Hao Li – Zhejiang University	Florian Beuerle – University of Würzburg
Marco Frasconi – University of Padua	Cheng Wang – Wuhan University
Jonathan Barnes – Washington University at St Louis	Michal Juríček – Basel University
Lei Fang – Texas A&M at College Station	Severin Schneebeli – University of Vermont
Adam Whalley – University of Vermont	Jeremiah Gassensmith – University of Texas at Dallas
Ronald Smaldone – University of Texas at Dallas	Ali Trabolsi – New York University Abu Dhabi
Ali Coskun – University of Fribourg	Psaras McGrier – Ohio State University
Mark Olson – Tianjin University	William Dichtel – Northwestern University
Adam Braunschweig – CUNY Hunter College	Yanli Zhao – Nanyang Technical University
Ognjen Miljanic – University of Houston	Niveen Khashab – King Abdullah University of Science
Brian Northrup – Wesleyan University	
Srinivasan Sampath – Council of Scientific & Industrial Research / India	

Top 80 Publications from Over 1150 in Total

94. Second-sphere co-ordination of a cationic platinum complex by crown ethers. The X-ray crystal structure of $[\text{Pt}(\text{bipy})(\text{NH}_3)_2\text{-dibenzo-30-crown-10}]^{2+}[\text{PF}_6]_2 \cdot 0.6\text{H}_2\text{O}$ (H.M. Colquhoun, J.F. Stoddart, J.B. Wolstenholme, D.J. Williams, R. Zarzycki), *Angew. Chem., Int. Ed. Engl.* **1981**, 20, 1051–1053.
163. Complexation of paraquat by a bisparaphenylene-34-crown-10 derivative (B.L. Allwood, N. Spencer, H. Shahriari-Zavareh, J.F. Stoddart, D.J. Williams), *J. Chem. Soc., Chem. Commun.* **1987**, 1064–1066.
201. Bisparaquat(1,4)cyclophane. A tetracationic multipurpose receptor (B. Odell, M.V. Reddington, A.M.Z. Slawin, N. Spencer, J.F. Stoddart, D.J. Williams), *Angew. Chem., Int. Ed. Engl.* **1988**, 27, 1547–1550.
202. Isostructural alternately-charged receptor stacks. The inclusion complexes of hydroquinol and catechol dimethyl ethers with bisparaquat(1,4)cyclophane (P.R. Ashton, B. Odell, M.V. Reddington, A.M.Z. Slawin, J.F. Stoddart, D.J. Williams), *Angew. Chem., Int. Ed. Engl.* **1988**, 27, 1550–1553.
218. A [2]catenane made to order (P.R. Ashton, T.T. Goodnow, A.E. Kaifer, M.V. Reddington, A.M.Z. Slawin, N. Spencer, J.F. Stoddart, C. Vicent, D.J. Williams), *Angew. Chem., Int. Ed. Engl.* **1989**, 28, 1396–1399.
249. A molecular shuttle (P.L. Anelli, N. Spencer, J.F. Stoddart), *J. Am. Chem. Soc.* **1991**, 113, 5131–5133.

264. Molecular Meccano 1. [2]Rotaxanes and a [2]catenane made to order (P.L. Anelli, P.R. Ashton, R. Ballardini, V. Balzani, M. Delgado, M.T. Gandolfi, T.T. Goodnow, A.E. Kaifer, D. Philp, M. Pietraszkiewicz, L. Prodi, M.V. Reddington, A.M.Z. Slawin, N. Spencer, J.F. Stoddart, C. Vicent, D.J. Williams), *J. Am. Chem. Soc.* **1992**, *114*, 193–218.
322. A chemically and electrochemically switchable molecular device (R.A. Bissell, E. Córdova, A.E. Kaifer, J.F. Stoddart), *Nature* **1994**, *369*, 133–137.
323. Olympiadane (D.B. Amabilino, P.R. Ashton, A.S. Reder, N. Spencer, J.F. Stoddart), *Angew. Chem., Int. Ed. Engl.* **1994**, *33*, 1286–1290.
339. Molecular meccano 2. The self-assembly of [n]catenanes (D.B. Amabilino, P.R. Ashton, C.L. Brown, E. Córdova, L.A. Godínez, T.T. Goodnow, A.E. Kaifer, S.P. Newton, M. Pietraszkiewicz, D. Philp, F.M. Raymo, A.S. Reder, M.T. Rutland, A.M.Z. Slawin, N. Spencer, J.F. Stoddart, D.J. Williams), *J. Am. Chem. Soc.* **1995**, *117*, 1271–1293.
344. Supported monolayers containing preformed binding sites. Synthesis and interfacial binding properties of a thiolated β -cyclodextrin derivative (M.T. Rojas, R. Königer, J.F. Stoddart, A.E. Kaifer) *J. Am. Chem. Soc.* **1995**, *117*, 336–343.
354. Dialkylammonium ion/crown ether complexes: The forerunners of a new family of interlocked molecules (P.R. Ashton, P.J. Campbell, E.J.T. Chrystal, P.T. Glink, S. Menzer, D. Philp, N. Spencer, J.F. Stoddart, P.A. Tasker, D.J. Williams), *Angew. Chem., Int. Ed. Engl.* **1995**, *34*, 1865–1869.
362. Molecular meccano 3: Constitutional and translational isomerism in [2]catenanes and [n]pseudorotaxanes (D.B. Amabilino, P.L. Anelli, P.R. Ashton, G.R. Brown, E. Córdova, L.A. Godínez, W. Hayes, A.E. Kaifer, D. Philp, A.M.Z. Slawin, N. Spencer, J.F. Stoddart, M.S. Tolley, D.J. Williams), *J. Am. Chem. Soc.* **1995**, *117*, 11142–11170.
363. Molecular meccano 4: The self-assembly of [2]catenanes incorporating photoactive and electroactive p-extended systems (P.R. Ashton, R. Ballardini, V. Balzani, A. Credi, M.T. Gandolfi, S. Menzer, L. Pérez-García, L. Prodi, J.F. Stoddart, M. Venturi, A.J.P. White, D.J. Williams), *J. Am. Chem. Soc.* **1995**, *117*, 11171–11197.
365. Interlocked and intertwined structures and superstructures (D.B. Amabilino, J.F. Stoddart), *Chem. Rev.* **1995**, *95*, 2725–2828.
383. Self-assembly in natural and unnatural systems (D. Philp, J.F. Stoddart), *Angew. Chem., Int. Ed. Engl.* **1996**, *35*, 1155–1196.
384. Pseudorotaxanes formed between secondary dialkylammonium salts and crown ethers (P.R. Ashton, E.J.T. Chrystal, P.T. Glink, S. Menzer, C. Schiavo, N. Spencer, J.F. Stoddart, P.A. Tasker, A.J.P. White, D.J. Williams), *Chem. Eur. J.* **1996**, *2*, 709–728.
413. Improved template-directed synthesis of cyclobis(paraquat-*p*-phenylene) (M. Asakawa, W. Dehaen, G. L'abbé, S. Menzer, J. Nouwen, F.M. Raymo, J.F. Stoddart, D.J. Williams), *J. Org. Chem.* **1996**, *61*, 9591–9595.
426. Molecular logic. An XOR gate based on a mechanical molecular machine (A. Credi, V. Balzani, S.J. Langford, J.F. Stoddart), *J. Am. Chem. Soc.* **1997**, *119*, 2679–2681.
453. The self-assembly of a switchable [2]rotaxane (M.-V. Martínez-Díaz, N. Spencer, J.F. Stoddart), *Angew. Chem., Int. Ed. Engl.* **1997**, *36*, 1904–1907.
459. Anion-assisted self-assembly (M.C.T. Fyfe, P.T. Glink, S. Menzer, J.F. Stoddart, A.J.P. White, D.J. Williams), *Angew. Chem.* **1997**, *109*, 2158–2160; *Angew. Chem., Int. Ed. Engl.* **1997**, *36*, 2068–2070.
472. A chemically and electrochemically switchable [2]catenane incorporating a tetrathiafulvalene unit (M. Asakawa, P.R. Ashton, V. Balzani, A. Credi, C. Hamers, G. Mattersteig, M. Montalti, A.N. Shipway, N. Spencer, J.F. Stoddart, M.S. Tolley, M. Venturi, A.J.P. White, D.J. Williams), *Angew. Chem. Int. Ed.* **1998**, *37*, 333–337.
500. Molecular machines (V. Balzani, M. Gómez-López, J.F. Stoddart), *Acc. Chem. Res.* **1998**, *31*, 405–414.
546. Electronically configurable molecular-based logic gates (C.P. Collier, E.W. Wong, M. Belohradsky, F.M. Raymo, J.F. Stoddart, P.J. Kuekes, R.S. Williams, J.R. Heath), *Science* **1999**, *285*, 391–394.
582. A [2]catenane-based solid state electronically reconfigurable switch (C.P. Collier, G. Mattersteig, E.W. Wong, Y. Luo, K. Beverly, J. Sampaio, F.M. Raymo, J.F. Stoddart, J.R. Heath), *Science* **2000**, *289*, 1172–1175.

599. Preparation and properties of polymer-wrapped single-walled carbon nanotubes (A. Star, J.F. Stoddart, D. Steuerman, M. Diehl, A. Boukai, E.W. Wong, X. Yang, S.-W. Chung, H. Choi, J.R. Heath), *Angew. Chem. Int. Ed.* **2001**, *40*, 1721–1725.
602. Template-directed synthesis of a [2]rotaxane by clipping under thermodynamic control of a crown ether-like macrocycle around a dialkylammonium ion (P.T. Glink, A.I. Oliva, J.F. Stoddart, A.J.P. White, D.J. Williams), *Angew. Chem. Int. Ed.* **2001**, *40*, 1870–1875.
618. Molecular-based electronically switchable tunnel junction devices (C.P. Collier, J.O. Jeppesen, Yi Luo, J. Perkins, E.W. Wong, J.R. Heath, J.F. Stoddart), *J. Am. Chem. Soc.* **2001**, *123*, 12632–12641.
623. Dynamic covalent chemistry (S.J. Rowan, S.J. Cantrill, G.R.L. Cousins, J.K.M. Sanders, J.F. Stoddart) *Angew. Chem. Int. Ed.* **2002**, *41*, 898–952.
631. Two-dimensional molecular electronics circuits (Y. Luo, C.P. Collier, J.O. Jeppesen, K.A. Nielsen, E. Delonno, G. Ho, J. Perkins, H.-R. Tseng, T. Yamamoto, J.F. Stoddart, J.R. Heath), *ChemPhysChem* **2002**, *3*, 519–525.
634. Starched carbon nanotubes (A. Star, D.W. Steuerman, J.R. Heath, J.F. Stoddart), *Angew. Chem. Int. Ed.* **2002**, *41*, 2508–2512.
653. Toward chemically controlled nanoscale molecular machinery (H.-R. Tseng, S.A. Vignion, J.F. Stoddart), *Angew. Chem. Int. Ed.* **2003**, *42*, 1491–1495.
671. The metastability of an electrochemically controlled nanoscale machine on gold surfaces (H.-R. Tseng, D. Wu, N.X. Fang, X. Zhang, J.F. Stoddart), *ChemPhysChem* **2004**, *5*, 111–116.
675. An operational supramolecular nanovalve (R. Hernandez, H.-R. Tseng, J.W. Wong, J.F. Stoddart, J.I. Zink), *J. Am. Chem. Soc.* **2004**, *126*, 3370–3371.
676. A molecular elevator (J.D. Badjić, V. Balzani, A. Credi, S. Silvi, J.F. Stoddart), *Science* **2004**, *303*, 1845–1849.
683. Molecular Borromean rings (K.S. Chichak, S.J. Cantrill, A.R. Pease, S.-H. Chiu, G.W.V. Cave, J.L. Atwood, J.F. Stoddart), *Science* **2004**, *304*, 1308–1312.
703. Whence molecular electronics? (A.H. Flood, J.F. Stoddart, D.W. Steuerman, J.R. Heath), *Science* **2004**, *306*, 2055–2056.
720. A reversible molecular valve (T. Nguyen, H.-R. Tseng, P.C. Celestre, A.H. Flood, Y. Liu, J.I. Zink, J.F. Stoddart), *Proc. Natl. Acad. Sci. USA* **2005**, *102*, 10029–10034.
723. Linear artificial molecular muscles (Y. Liu, A.H. Flood, P.A. Bonvallet, S.A. Vignion, H.-R. Tseng, T.J. Huang, B. Brough, M. Baller, S. Magonov, S. Solares, W.A. Goddard III, C.-M. Ho, J.F. Stoddart), *J. Am. Chem. Soc.* **2005**, *127*, 9745–9759.
775. A 160-kilobit molecular electronic memory patterned at 10^{11} bits per square centimeter (J.E. Green, J.W. Choi, A. Boukai, Y. Bunimovich, E. Johnston-Halprin, E. Delonno, Y. Luo, B.A. Sheriff, K. Xu, Y.S. Shin, H.-R. Tseng, J.F. Stoddart, J.R. Heath), *Nature* **2007**, *445*, 414–417.
821. Big and little Meccano (J.F. Stoddart, H.M. Coloquhoun), *Tetrahedron* **2008**, *64*, 8231–8263.
852. The chemistry of the mechanical bond (J.F. Stoddart), *Chem. Soc. Rev.* **2009**, *38*, 1802–1820.
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Selected Patents (Since 2010)

Patent Rights Solely Owned by Northwestern University:

- 1 Nanoporous carbohydrate frameworks and the sequestration and detection of molecules using the same**
(NU 12009-170, 2010-077, 2011-027)

Inventors: J. Fraser Stoddart, Ross S. Forgan, Ronald A. Smaldone, Jeremiah J. Gassensmith
U.S. Provisional Patent Application No. 61/314,889 filed on March 17, 2010.
U.S. Provisional Patent Application No. 61/351,704 filed on June 4, 2010.
U.S. Utility Patent Application No. 13/050,709 filed on March 17, 2011.
International Patent Application PCT/US2011/028866 filed on March 17, 2011.

2 Compounds and Methods to Isolate Gold (NU 2013-071)

Inventors: James Fraser Stoddart, Zhichang Liu, Marco Frasconi, Dennis Cao
U.S. Provisional Patent Application No. 61/814,066 filed on April 19, 2013.
U.S. Utility Patent Application Serial Number 14/256,578 filed on April 18, 2014.
PCT Application Serial Number PCT/US2014/034697 filed on April 18, 2014.

Patent Rights Jointly Owned between Northwestern University and King Abdulaziz City for Science & Technology:

3 Electrochemical Detection of Carbon Dioxide Using a Carbohydrate Based Coordination Polymer (NU 2013-213).

Inventors: Omar K. Farha, Jeremiah J Gassensmith, Nak Cheon Jeong, J. Fraser Stoddart
Provisional application No. 62/045,517 filed on September 3, 2014.

4 Carbohydrate-Mediated Purification of Petrochemicals (NU 2014-078).

Inventors: Karel J. Hartlieb, James M. Holcroft, J. Fraser Stoddart
Provisional application No. 62/008,071 filed on June 6, 2014.

Impact and Influence

Some measure of the influence and impact of Stoddart's work may be drawn from citation statistics. Six of his >1130 publications have been cited over 1,000 times, 19 over 500, 50 over 300, 190 over 100, and 400 over 50. He has an h-index of 141. He has given >1,000 plenary/invited lectures. During 45 years, >400 PhD and postdoctoral students have passed through his laboratories and been inspired by his imagination and creativity, and >100 have subsequently embarked upon successful independent academic careers.

Stoddart has completed after three years (2014–2016) the writing of a book entitled, *“The Nature of the Mechanical Bond: From Molecules to Machines”* with one of his former graduate students, Carson Bruns, formerly a Miller Research Fellow at Berkeley, now an assistant professor at the University of Colorado.

The book chronicles the birth and life of molecules with mechanical bonds such as catenanes and rotaxanes. Topics covered include the strategies for synthesizing them, the supramolecular and host-guest motifs utilized in their templation, their various topologies and architectures, their chirality, isomerism, and dynamics in solution and condensed phases, their switching properties under the influence of external stimuli, and their many current and potential applications in science and technology. The book discusses the newest bond in chemistry ‘beyond the supermolecule’ – namely, the mechanical bond. It summarizes the most current, cutting-edge science and technology on molecules with mechanical bonds, in a format that is colorful, image-driven, artistic, and engaging.

The primary audience are researchers engaged at all levels in the fields of supramolecular chemistry, host-guest chemistry, and mechanostereochemistry. The secondary audience are students and professionals in chemistry with an interest in these fields. The tertiary audience are students and professionals in other fields of science, as well as laypeople with a basic scientific background.

The book is intended to be the most current resource for research related to the mechanical bond, with many references, intended to engage newcomers and veterans alike in the field. The content of the book is highly image-driven, with novel ways of representing concepts, while allowing much of the content to be understood with minimal time and effort on the part of the reader. The book is also forward looking, setting the stage for future research in the field. The book adopts a contemporary, easy-to-navigate digital format. It has been produced after the style of *Angewandte Chemie* – that is 8.5” x 11” in a double column format. The book runs to ca. 670 pages including ca. 900 color illustrations.