

## John C. Warner

100 Research Drive  
Wilmington, MA 01887  
978-225-5420

[John@JohnWarner.Org](mailto:John@JohnWarner.Org)

[www.JohnWarner.Org](http://www.JohnWarner.Org)

John is the recipient of the 2014 Perkin Medal, widely acknowledged as the highest honor in American Industrial Chemistry, and was named a 2016 AAAS-Lemelson Invention Ambassador. He received his BS in Chemistry from UMASS Boston, and his PhD in Chemistry from Princeton University. After working at the Polaroid Corporation for nearly a decade, he then served as tenured full professor at UMASS Boston and Lowell (Chemistry and Plastics Engineering). In 2007 he founded the Warner Babcock Institute for Green Chemistry, LLC (A research organization developing green chemistry technologies) where he serves as President and Chief Technology Officer, and Beyond Benign (a non-profit dedicated to sustainability and green chemistry education). He is one of the founders of the field of Green Chemistry, co-authoring the defining text Green Chemistry: Theory and Practice with Paul Anastas. He has published nearly 300 patents, papers and books. His recent work in the fields of pharmaceuticals, personal care products, solar energy and construction and paving materials are examples of how green chemistry principles can be immediately incorporated into commercially relevant applications. Warner received The 2004 Presidential Award for Excellence in Science Mentoring (considered one of the highest awards for US science education), the American Institute of Chemistry's Northeast Division's Distinguished Chemist of the Year for 2002 and the Council of Science Society President's 2008 Leadership award. Warner was named by ICIS as one of the most influential people impacting the global chemical industries. In 2011 he was elected a Fellow of the American Chemical Society and named one of "25 Visionaries Changing the World" by Utne Reader. In 2017 the German Ministry of Economics and The Technical University of Berlin announced the naming of "The John Warner Center for Green Chemistry Star-Ups" in his honor.

*August 2007 - Present*



**Warner Babcock Institute for Green Chemistry, LLC**

President and Chief Technology Officer



**Beyond Benign**

President

*January 1996 – August 2007*



**University of Massachusetts**

Director, Center for Green Chemistry, Lowell [2004-2007]

Professor, Plastics Engineering, Lowell [2004-2007]

Professor, Community Health and Sustainability, Lowell [2004-2006]

Director, Green Chemistry PhD Program, Boston [2001-2004]

Chair, Department of Chemistry, Boston [2001-2003]

Director, Center for Green Chemistry, Boston [2000-2004]

Director, Biochemistry Major, Boston [1999-2001]

Professor (Tenured), Department of Chemistry, Boston [2000-2004]

Associate Professor, Department of Chemistry, Boston [1996-2000]

*June 1988 - January 1996*



**Polaroid Corporation, Cambridge, MA**

Sr. Research Scientist/Research Group Leader

*September 1984 – May 1988*



**Princeton University, Princeton, NJ**

Ph.D. (Organic Chemistry) June 1988

MA (Organic Chemistry) January 1986

Research Advisor: Edward C. Taylor

*September 1980 – May 1984*



**University of Massachusetts, Boston, MA**

B. Sc. (Chemistry) May 1984

Research Advisor: Jean-Pierre Anselme

**Selected Honors and Awards:**

“The John Warner Center for Green Chemistry Startups” German Ministry of Economics Technical University of Berlin **2017**  
 “Award for Circular Economy Leadership Finalist” - Fortune and Accenture Strategy **2017**  
 “Harry & Carol Mosher Award” – ACS Silicon Valley **2016**  
 “AAAS-Lemelson Invention Ambassador” AAAS and Lemelson Foundation **2016**  
 “Eminent Scientist Lecture” American Chemical Society **2015**  
 “Massachusetts State Senate Recognition” Senator Bruce Tarr **2014**  
 “Special Congressional Recognition” Congressman John Tierney **2014**  
 “The Perkin Medal” Chemistry Industry Society **2014**  
 “Fellow of the Royal Society of Chemistry” Elected **2014**  
 “Grace Van DerVoort Lecturship” Sage Colleges, **2013**.  
 “The Marple-Schweitzer Lectureship” Northwestern University, **2013**  
 “Jean Dreyfus Boissevain Lectureship” Eastern Michigan University, **2013**  
 “Henry A. Lardy Distinguished Lectureship”, South Dakota State University, **2013**  
 “Henry Maso Award” Society of Cosmetic Chemistry, **2012**  
 “Dow Sustainable Chemistry Lectureship”, Colorado State University, **2012**  
 “One of 25 Visionaries Changing the World”, Utne Reader, **2012**  
 “Fellow of the American Chemical Society” Elected **2011**.  
 “Environmental Merit Award” United States Environmental Protection Agency, **2011**  
 “GSA Chemistry Lectureship”, University of Cincinnati, **2010**  
 “One of the Most Influential People in the Chemical Industries” ICIS **2008**  
 “Award for Outstanding Leadership” Council of Science Society Presidents, **2008**  
 “Honorary Member” Alpha Lambda Delta Freshman’s National Honor Society, **2006**  
 “Presidential Award for Excellence in Science Mentoring” NSF and President George W. Bush, **2004**  
 “Outstanding Environmental Innovation” Environmental Business Council of New England, **2004**.  
 “Distinguished Mentoring Service Award” Ronald E. McNair Baccalaureate Achievement Program, **2004**.  
 “Outstanding Service to Nursing Award”, Sigma Theta Tau, **2004**  
 “College and University Health and Safety Award” ACS Division of Chemical Health and Safety, **2004**  
 “Distinguished Chemist of the Year”, American Institute of Chemists, New England Chapter, **2002**  
 “UMASS President's Public Service Award”, University of Massachusetts, **2002**  
 “Reinventing Government”, National Performance Review, from Vice President Al Gore, **1997**  
 “Metropolitan Boston’s Best and Brightest College Seniors”, Celebrity Magazine, **1984**  
 “John Philip Sousa Award” and “Class Musician”, Quincy High School, **1980**

**Professional Responsibilities and Memberships:**

Editor, Green Chemistry Letters and Reviews  
 Editorial Board, Crystal Growth and Design  
 Graduate School Leadership Council, Princeton University  
 The Circular Economy, World Economic Forum, Adviso  
 Apple Computers, Chair, Green Chemistry and Sustainability Advisory Board  
 The Dow Chemical Company, Sustainability External Advisory Council  
 Biogen, Sustainability Advisory Panel  
 Founding Stakeholder, Presidential Green Chemistry Challenge  
 Fellow, American Chemical Society  
 Fellow, Royal Society of Chemistry  
 American Institute of Chemical Engineers  
 American Association for the Advancement of Science  
 Society of Environmental Toxicology and Chemistry  
 Oceanic Global, Advisor  
 DexLeChe, Advisor  
 PAESMEM, Advisor  
 Protect Our Breasts, Advisor

**Academic Appointments:***August 2017 – Present***Monash University**  
Adjunct Professor of Chemistry*December 2015 – Present***Harvard University**  
Adjunct, Extension School, Green Chemistry*August 2011 – Present***Simmons College**  
Adjunct Professor of Chemistry**University Classes Taught:**

Intro Chemistry I & II  
 Organic Chemistry I & II  
 Biochemistry I & II  
 Physiological Chemistry I & II  
 Nutrition  
 Medicinal Chemistry  
 Polymer Chemistry  
 Biophysical Chemistry  
 Chemistry and the Environment

Chemical Dynamics  
 Chemical Structure  
 Chemical Synthesis  
 Experimental Conceptualization  
 Introduction to Green Chemistry  
 Principles of Green Chemistry  
 Mechanistic Toxicology  
 Toxicology and Env. Health Sciences for Chemists  
 Sustainable Materials Design

**Personal:**

Wife: Dr. Amy Cannon Warner  
 Children: Joanna, Tom, John-John (Deceased), Libby, Amy and Natalie  
 Activities: Occasional Runner (Marathon, Half Marathon, 10K)  
 Occasional Musician (Keyboards, Guitar, Woodwinds, Percussion)  
 Occasional Gamer (World of Warcraft)  
 Occasional Author (Green Chemistry: Theory and Practice 1998, The Missing Elements 2018)

**Recent (5-years) Representative Presentations:**

- Keynote Address, *Catalyzing Innovation While Addressing Global Challenges*, Chemical Innovation Exchange Conference, Frankfurt, Germany, September 19, 2017
- Keynote Presentation, *Entropy Considerations in the Sustainable Design of Cosmetics*, The Future of Sustainability, NY Society of Cosmetic Chemists, Paramus, NJ, February 15, 2017
- Henry and Carol Mosher Award Lecture, *Green Chemistry: The Missing Elements*, Silicon Valley American Chemical Society, Santa Clara, CA, January 26, 2017
- Keynote Lecture, *Green Chemistry: Driving Innovation to Commercialization*, World Conference on Fabric and Home Care, Singapore, October 7, 2016
- Award Address, *Inventing Green Chemistry*, AAAS / Lemelson Foundation Invention Ambassadors, Washington, DC, July 14, 2016
- Earth Day Keynote, *Green Chemistry: The Missing Elements*, Stony Brook University, Earthstock: A Celebration of Earth Day, Stony Brook, NY, April 22, 2016
- Keynote Lecture, *Entropic Considerations in Molecular Design and Elements of Innovation*, 5th Design Science Symposium, Rhode Island School of Design, Providence, RI, April 17, 2016
- Keynote Lecture, *Entropic Considerations in Materials Design*, Buildwell 2016, San Francisco, CA, February 11, 2016
- Closing Keynote, *Innovation with Green Chemistry: A Faster Path to Commercialization*, InformEx 2016, New Orleans, LA, February 4, 2016.
- Keynote Speaker, *Green Chemistry and Innovation*, 4th Industrial Green Chemistry International Convention, Mumbai, India, December 04, 2015
- Centennial Speaker, *Green Chemistry: The Missing Elements*, University of Toledo Chemistry and Biochemistry Department, Toledo, OH, October 01, 2015
- Keynote Speaker, *Green Chemistry and Product Development*, Living Product Expo, Pittsburgh, PA, September 18, 2015
- Keynote Lecture, *The Technology Greenhouse – Idea to Commercialization*, The Guardian Sustainable Business Event, New York, NY, September 2, 2015
- Eminent Scientist Lecture, *What's in Your Chemical Toolbox?*, 250th American Chemical Society National Meeting, Boston, MA, August 17, 2015
- Keynote Lecture, *Ocean Plastics and Green Chemistry*, United Nations Parley – Oceans, Climate. Life, New York, NY, June 29, 2015
- Keynote Lecture, *Molecular Mechanisms and Entrepreneurship in Green Chemistry*, International Symposium on Green Chemistry, La Rochelle, France, May 4, 2015
- Plenary Speaker, *Entropic Control, Sustainable Nanotechnology at the Molecular Level*, 6th Sustainable Nanotechnology Conference, Venice, Italy, March 11, 2015
- Keynote Speaker, *Green Chemistry and Innovation*, AfterTaste 2015: Inside Imagination, New School of Design, New York, NY, February 28, 2015
- Keynote Speaker, *Green Chemistry: Helping Create a Safer, More Sustainable Future*, Iowa State University Symposium on Sustainability, Ames, IA, February 23, 2015
- Keynote Speaker, *Green Chemistry and Bio-Based Materials*, 6th Next Generation Bio-Based & Sustainable Chemicals Summit, New Orleans, LA, February 3, 2015
- Keynote Speaker, *Green Chemistry: Research through to Commercialization*, 5th Asia-Oceanic Conference on Green and Sustainable Chemistry, New Delhi, India, January 15, 2015
- Keynote Speaker, *Green Chemistry: Biomimicry and Molecular Psychology*, Bioneers 25th Anniversary Summit, San Rafael, CA, October 18, 2014
- Keynote Speaker, *Perspective on Sustainable Chemistries*, 33rd Dish Symposium, Hosted By BASF, Detroit, MI, September 23, 2014
- Expert Panelist Kickoff Event, *Green Chemistry and Building Materials*, Building Product Ecosystems, New York, NY, September 17, 2014
- Perkin Medal Award Address, *Green Chemistry a Perspective*, Society of the Chemical Industry, Philadelphia, PA, September 16, 2014
- Plenary Address, *Green Chemistry: New Eyes and new Ideas in Science*, Biennial Conference of Chemical Education, Allendale, MI
- Opening Keynote, *Introduction to Green Chemistry*, Chemicals, Health and Green Chemistry Workshop, Ramat Hanadiv, Israel, June 10, 2014

- Opening Keynote, *Green Chemistry Approaches to Endocrine Disruptor Free Products*, Environmental Endocrine Disruptors Gordon Research Conference, Lucca, Italy, May 11, 2014
- Keynote Address, *Green Chemistry and Competitive Advantage*, Pressure Sensitive Tape Council Annual Meeting, Nashville, TN, April 30, 2014
- Keynote Lecture, *Green Chemistry: An Opportunity for Growth and Competitive Advantage*, EcoChem: Global Sustainable Chemistry and Engineering, Basel, Switzerland, November 19, 2013
- Innovation Day Opening Plenary, *Entropy at the Intersection of Innovation and Sustainability*, The Chemical Heritage Foundation, Philadelphia, PA, September 17, 2013
- Marple Schweitzer Award Lecture, *Green Chemistry: The Missing Elements*, Northwestern University, Evanston, IL, May 31, 2013
- Jean Dreyfus Boissevain Award Lecture, *Green Chemistry: The Missing Elements*, Eastern Michigan University, Ypsilanti, MI, May 29, 2013
- Keynote Lecture, *Entropic Control in Materials Design as an Example of Green Chemistry*, Adhesive and Sealant Council Annual Meeting, Atlanta, GA, April 21, 2013
- Lardy Award Lecture, *Green Chemistry: Principles and Practice*, South Dakota State University, Brookings, SD, February 6, 2013
- Henry Maso Award Lecture, *Green Chemistry: The Missing Elements of Materials Design*, Society of Cosmetic Chemistry Annual Scientific Seminar, Charleston, SC, May 31, 2012
- Closing Keynote, *The Future in Green Chemistry*, Fortune Brainstorm Green, Laguna Niguel, CA, April 18, 2012

Representative Inventions:



Potential ALS drug

Potential Colon, lung and pancreatic cancer drug



Potential cytostat cancer drug

Potential alzheimer's disease drug



Potential diabetes drug

Sustainable asphalt pavement



DELTA-S



Formaldehyde free wood adhesive

Nontoxic hair color restoration



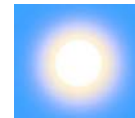
Ocean plastics processing

Fluorine free textile and fabric shaping



BPA-free thermal imaging technology

Solar energy technologies



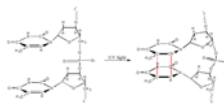
Water harvesting technology

Bromine free flame retardants



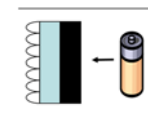
Lithium battery recycling technology

Precious metal recovery from E-Waste



Thymine based photoresists

Arsenic removal from drinking water



Dozens of imaging inventions for Polaroid

## Patents:

### *Medicine:*

- "Preparation of 2-phenylbenzofuran derivatives for the treatment of central nervous system disorders and other disorders" Warner, John C.; Cheruku, Srinivasa R.; Gladding, Jeffery A. PCT Int. Appl. WO 2017083488 Published May 18, 2017.
- "Preparation of Dipyridyl Thiosemicarbazones as Anticancer Agents" Warner, John C.; Gladding, Jeffery A.; Cheryuku, Srinivasa R. PCT Int. Appl. WO 2017058748. Published April 6, 2017.
- "Method for the preparation of n-acetyl cysteine amide" Warner, John C.; Cheruku, Srinavasa; Thota, Sambaiah; Lee, John W. PCT Int. Appl. WO 2015148880 Published October 01, 2015.
- "Metal Complexes and Methods of Treatment" Warner, John C., Chreuku, Srinivasa R., Hari, Anitha; Norman, James J. PCT Int. Appl. WO 2015070177 Filed November 10, 2014. Published May 14, 2015.
- "Rilyazine derivatives and compositions for the treatment of cancer" Warner, John C.; Gladding, Jeffery A.; Gero, Thomas W.; Cheruku, Srinivasa R. PCT Int. Appl. WO 2015034785. Filed August 29, 2014. Published March 12, 2015.
- "Preparation of Rilyazine Derivatives Useful in Treatment of Cancer" Warner, John C.; Gladding, Jeffery A.; Gero, Thomas W.; Cheruku, Srinivasa R. US Pat. Appl. US 20150065510. Filed August 29, 2014. Published March 5, 2015.
- "Dihydro-6-Azaphenalene Derivatives for the Treatment of CNS, Oncological Diseases and Related Disorders" Warner, John C.; Nguyen, Dieu; Gladding, Jeffery A.; Cheruku, Srinivasa R.; Loebelenz, Jean R.; Norman, James J.; Thota, Sambaiah; Lee, John W.; Rosenfeld, Craig. US Pat. Appl. US 20140094487. Filed September 27, 2013. Published April 3, 2014. PCT Int. Appl. WO 2014052906. Filed September 27, 2013. Published April 3, 2014. CA 2886749. Filed September 27, 2013. Published April 3, 2014.

### *Construction Materials:*

- "Lignocellulosic composites and methods of making same" Warner, John C.; Whitfield, Justin R.; Gladding, Jeffery A.; Allen, Richard M. PCT Int. Appl. WO 2016191521 Published December 01, 2016.
- "Compositions and methods for compatibilizing fluorinated materials in nonfluorinated solvent systems" Warner, John C.; Loebelenz, Jean R.; Kariuki, Peter N.; Bwambok, David K. US. Pat. Appl. Publ. US 20160304641 Published October 20, 2016.
- "Functionalized Fluorinated Polyhedral Oligomeric Silesquioxane (F-POSS) monomer compositions and use thereof" Warner, John C.; Loebelenz, Jean R.; Cheruku, Srinivasa Rao; Gero, Thomas Woodrow, PCT Int. Appl. WO 2016145060 Published September 15, 2016.
- "Process for Preparing Functionalized F-Poss Monomers" Warner, John C.; Loebelenz, Jean R.; Cheruku, Srinivasa Rao; Gero, Thomas Woodrow, PCT Int. Appl. WO 2016134207. Published August 25, 2016.
- "Synthetic blend Fluorinated Polyhedral Oligomeric Silsesquioxane (F-POSS) compositions formed from multiple feedstock materials" Warner, John C. US Pat. Appl. US 20160096853. Published April 7, 2016.
- "Asphalt Binder Additive Compositions and Related Materials" Warner, John C., Muollo, Laura R.; Walker, Rowan L., Bianchini, J. R. PCT Int. Appl. WO 2015070180. Filed November 10, 2014. Published May 14, 2015.
- "Wood Composites Containing Oleaginous Microbial Biomass" Braksmayer, Diza; McKee, Adrienne; Janssen, Giselle; Krevor, David H.; Warner, John C.; Whitfield, Justin R.; Dorogy, William E., Jr.; Kearney, Frederick Richard; Stoler, Emily J. PCT Int. Appl. WO 2015196134. Filed Jun 20, 2014. Published Dec 23, 2015
- "Bromine-Free Fire Retardant (FR) Agents Capable of Using a Cyclization Mechanism" Warner, John; Tang, Pui-In; Stewart, Amie; Kelly, Colleen. PCT Int. Appl. WO 2015050542. Filed October 2, 2013. Published April 9, 2015.
- "Structured endothermic fire-retardant agents encapsulated in thermally-sensitive material and fire-retardant composition comprising polymer matrix and microcapsules incorporating fire-retardant agents" Warner, John; Tang, Pui-In; Stewart, Amie; Kelly, Colleen. PCT Int. Appl. WO 2015026353. Filed August 22, 2013. Published February 26, 2015.

### *Cosmetics and Personal Care:*

- "Aqueous hair dyeing compositions comprising poly(lactic acid)", Lago, Juliana Carvalhaes; Fregonesi, Adriana de Andrade; Scanavez de Paula, Carla Maria Sanches; Pedroso de Oliveira, Ana Paula; Warner, John C.; Muollo, Laura; Cookson, Jennifer, PCT Int. Appl. (2017), WO 2017112999 A1 20170706.
- "Aqueous colorant composition and use thereof", Lago, Juliana Carvalhaes; Fregonesi, Adriana; Scanavez de Paula, Carla Maria Sanches; Pedroso de Oliveira, Ana Paula; Warner, John C.; Muollo, Laura; Cookson, Jennifer, U.S. Pat. Appl. Publ. (2017), US 20170189310 A1 20170706.

- “Formulation and Process for Hair Dyeing” Warner, John C.; Muollo, Laura; Stewart, Amie US Patent Appl. 20160184197. Filed September 9, 2014. Published June 30, 2016.
- “Formulation and Processes for Hair Coloring” Warner, John C.; Muollo, Laura; Stewart, Amie. PCT Int. Appl. WO 2015057254. Filed January 25, 2015. Published April 23, 2015.
- “Formulation and Processes for Hair Coloring” Warner, John C.; Muollo, Laura; Stewart, Amie. US Patent 8,828,100. Filed Oct. 14, 2013. Published September 9, 2014.
- “Formulation and method for hair dyeing” Warner, John C.; Viola, Michael S. US Patent 8,366,791. Filed September 2, 2011. Published February 5, 2013.
- “Coloring Composition Containing L-DOPA and L-arginine and Forming a Non-covalent Derivatization Complex” Warner, John C.; Stoler, Emily J PCT Int. Appl. WO 2012067868. Filed November 7, 2011. Published May 24, 2012.
- “Coloring Composition Containing L-DOPA and L-arginine and Forming a Non-covalent Derivatization Complex” Warner, John C.; Stoler, Emily J US Patent 8,118,880. Filed November 15, 2010. Published February 21, 2012.
- “Hair Coloring Composition Containing an Aromatic Compound and an Initiator” Warner, John C.; Stoler, Emily J PCT Int. Appl. WO 2011060354. Filed November 15, 2010. Published November 3, 2011. EP Application 2501374. Filed November 15, 2010. Published September 26, 2012.
- “Coloring Composition Containing an Aromatic Compound and Tyrosinase Warner, John C.; Stoler, Emily J PCT Int. Appl. WO 2011060351. Filed November 15, 2010. Published May 19, 2011. CN Application 102695495. Filed November 15, 2010. Published September 26, 2012. EP Application 2501374. Filed November 15, 2010. Published September 26, 2012.
- “Photoreactive Polymers and Devices for use in Hair Treatments” Warner, John C.; Cannon, Amy S.; Raudys, Jennifer; Undurti, Arundhati; PCT Int. Appl. WO 2004058187. Filed December 22, 2003. Published December 23, 2004. CA 2510162. Filed December 22, 2003. Published July 15, 2004. EP 1575537. Filed December 22, 2003. Published September 21, 2005.

#### *Thermal Imaging:*

- “Thermal Recording Media” Chakar, Fadi Selim; Warner, John Charles; Whitfield, Justin Robert; Lugus, Michelle Wanch Li; Banerjee, Deboshri, PCT Int. Appl. WO 2015094630 Published June 25, 2015.
- “Thermal Recording Materials Containing Phosphate Modifier” Chakar, Fadi Selim; Warner, John Charles; Whitfield, Justin Robert; Lugus, Michelle Wanch Li; Banerjee, Deboshri, US Pat. Appl. US 20150165806. Filed December 18, 2013. Published June 18, 2015.
- “Thermal Imaging” Warner, John C. US Pat. Appl. US 20140371064. Filed June 18, 2013. Published December 18, 2014.
- “Thermographic Recording Films.” Dombrowski, Edward J.; Jones, Robert L.; Warner, John C.; Yang, Jiyue US Patent 5,750,463. Filed April 22, 1997. Published May 12, 1998.
- “Imaging Medium and Process.” Fehervari, Agota F.; Gaudiana, Russell A.; Kolb, Eric S.; Mehta, Parag G.; Taylor, Lloyd D.; Warner, John C. US Patent 5,424,268. Filed May 13, 1994. Published June 13, 1995.
- “Thermally-Processable Image Recording Materials Including Substituted Purine Compounds.” Ford, Maureen F.; Guarrera, Donna J.; Mischke, Mark M.; Pai, Ramdas; Warner, John C. US Patent 5,411,929. Filed June 30, 1994. Published May 2, 1995.

#### *Recycling Technologies:*

- “Method for the recovery of lithium cobalt oxide from lithium ion batteries” Poe, Sarah L.; Paradise, Christopher L.; Muollo, Laura R.; Pal, Reshma; Warner, John C.; Korzenski, Michael B. US Pat. Appl. US 20140306162. Filed June 19, 2012. Published October 16, 2014.
- “Sustainable process for reclaiming precious metals and base metals from electronic waste” Korzenski, Michael B.; Jiang, Ping; Norman, James; Warner, John C.; Ingalls, Laura; Gnanamgari, Dinakar; Strickler, Fred; Mendum, Ted. US Pat. Appl. US 20130336857. Filed August 19, 2011. Published December 19, 2013.
- “Sustainable process for reclaiming precious metals and base metals from electronic waste” Korzenski, Michael B.; Jiang, Ping; Norman, James; Warner, John C.; Ingalls, Laura; Gnanamgari, Dinakar; Strickler, Fred; Mendum, Ted. PCT Int. Appl. WO 2012024603. Filed August 19, 2011. Published February 23, 2013. CN 103249849. Filed August 19, 2011. Published August 14, 2013. EP 2606158. Filed August 19, 2011. Published June 26, 2013.
- “Method for the recovery of lithium cobalt oxide from lithium ion batteries” Poe, Sarah L.; Paradise, Christopher L.; Muollo, Laura R.; Pal, Reshma; Warner, John C.; Korzenski, Michael B. PCT Int. Appl. WO 2012177620. Filed June 19, 2012. Published December 27, 2012. CN 103620861. Filed June 19, 2012. Published March 5, 2014. EP 2724413. Filed June 19, 2012. Published April 30, 2014.



### *Solar Energy:*

- "Dye-Sensitized Solar Cell and Corrosion Resistant Electrode Stack Therein" Plavisch, Lauren; Ricci, Melissa; Warner, John C. US Pat. Appl. US 20130263921. Filed April 10, 2012. Published October 10, 2013.
- "Solar Cells with a Colorant Sensitized Semiconductor Layer Prepared from a Presensitized Semiconductor Composition" Warner, John C.; Viola, Michael S.; Barykina, Olga; Dua, Vineet. US Pat. Appl. US 20130180587. Filed January 17, 2012. Published July 18, 2013.
- "Dye Formulation for Fabricating Dye Sensitized Electronic Devices" Warner, John C.; Viola, Michael S., US Pat. Appl. US 20130074935. Filed September 23, 2011. Published March 28, 2013.
- "Systems and Methods for Preparing a Metal Oxide Based Anode for Dye-Sensitized Solar Cells" Warner, John C.; Van Benschoten, Helen; Cannon, Amy US Pat. Appl. US 20110232742. Filed Feb. 17, 2011. Published September 29, 2011.
- "Semiconductor Compositions for Dye-Sensitized Solar Cells" Warner, John C.; Vanbenschoten, Helen; Cannon, Amy US Pat. Appl. US 20110232717. Filed February 17, 2011. Published September 29, 2011.
- "Additives for Solar Cell Semiconductors" Warner, John C. US Pat. Appl. US 20110226306. Filed Feb. 17, 2011. Published September 22, 2011.
- "Systems and Methods for Preparing Components of Photovoltaic Cells" Warner, John C.; Van Benschoten, Helen; Cannon, Amy PCT Int. Appl. WO 2011103494. Filed February 18, 2011. Published August 25, 2011.
- "Semiconductor Compositions for Dye-Sensitized Solar Cells" Warner, John C.; Vanbenschoten, Helen; Cannon, Amy PCT Int. Appl. WO 2011103503. Filed February 18, 2011. Published August 25, 2011.
- "Additives for Solar Cell Semiconductors" Warner, John C. PCT Int. Appl. WO 2011103506. Filed February 18, 2011. Published August 25, 2011.

### *Polymer Photochemistry:*

- "Photoinduced Copolymer Functionalized Substrates" Warner, John C.; Cannon, Amy S.; Dye, Kevin PCT Int. Appl. WO 2007139810. Filed May 23, 2007. Published December 6, 2007.
- "Methods of solubilizing and recycling biodegradable polymers containing photoreactive moieties using irradiation" Warner, John C.; Morelli, Alessandra; Ku, Man Ching US Patent 6,946,284. Filed November 15, 2002. Published September 20, 2005.
- "Copolymers having pendant functional thymine groups" Grasshoff, J. Michael; Taylor, Lloyd D.; Warner, John C. US Patent 5,708,106. Filed May 3, 1996. Published January 13, 1998.
- "Images by Exposure to Actinic Radiation; Solvent Removal of Non-Exposed Areas" Grasshoff, J. Michael; Taylor, Lloyd D.; Warner, John C. US Patent 5,616,451. Filed May 24, 1995. Published April 1, 1997.
- "Vinylbenzyl Thymine Monomers and Polymers and Products Prepared from Same" Grasshoff, J. Michael; Taylor, Lloyd D.; Warner, John C. PCT Int. Appl. WO 1995031755. Filed May 10, 1995. Published November 23, 1995. CA 2185144. Filed May 10, 1995. Published November 23, 1995. EP 0759193. Filed May 10, 1995. Published February 26, 1997. DE 69504652. Filed May 10, 1995. Published October 15, 1998.
- "Vinylbenzyl Thymine Monomers and their use in photoresists" Grasshoff, J. Michael; Taylor, Lloyd D.; Warner, John C. US Patent 5,455,349. Filed May 13, 1994. Published October 3, 1995.

### *Electronics:*

- "Protective barriers for electronic devices" Warner, John C.; Viola, Michael S. US Patent 8,581,246. Filed September 2, 2011. Published November 12, 2013.
- "Non-fluoride containing composition for removal of polymers and other organic material from a surface" Korzenski, Michael B.; Jiang, Ping; Warner, John C.; Mendum, Ted; Lugus, Michelle; Whitfield, Justin; Vanbenschoten, Helen; Payne, Makonnen PCT Int. Appl. WO 2010091045. Filed Feb 3, 2010. Published August 12, 2010.
- "Metal Oxide Films" Warner, John C.; Morelli, Alessandra US Pat. Appl. US 20030054207. Filed July 17, 2002. Published March 20, 2003. PCT Int. Appl. WO 2003008079. Filed July 17, 2002. Published January 30, 2003.

### *Photo-acid Catalysis:*

- "Support containing lewis acid, dye precursor, acidic material and thermal stabilizer." Dombrowski, Edward J.; Guarrera, Donna J.; Jones, Robert L.; Mischke, Mark R.; Warner, John C.; Yang, Jiyue US Patent 5,750,464. Filed April 22, 1997. Published May 12, 1998.

- “Acid-Catalyzed Thermal Decomposition of Secondary Acid Generator and Formation of Second Acid; Copper Compound and Reactive Material Used to Decompose Superacid Precursor” Marshall, John L.; Baker, Rita Shon S.; Takiff, Larry C.; Telfer, Stephen J.; Warner, John C. US Patent 5,741,630. Filed April 25, 1994. Published April 21, 1998.
- “Process for Fixing an Image, and Medium for Use Therein” Ehret, Anne; Marshall, John L.; Baker, Rita Shon S.; Takiff, Larry C.; Telfer, Stephen J.; Warner, John C. US Patent 5,582,956. Filed April 28, 1994. Published December 10, 1996.
- “Process for Fixing an Image” Ehret, Anne; Marshall, John L.; Baker, Rita Shon S.; Takiff, Larry C.; Telfer, Stephen J.; Warner, John C. PCT Int. Appl. WO 95029067. Filed April 25, 1995. Published November 2, 1995. CA 2186514. Filed April 25, 1995. Published November 2, 1995. DE 69506396. Filed April 25, 1995. Published January 14, 1999. EP 0757628. Filed April 25, 1995. Published February 12, 1997.

*Photographic Sciences:*

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- “Green Chemistry: Sustainability with Nature’s Resources” Warner, John C. 241<sup>st</sup> ACS National Meeting, Anaheim, CA, March 27-31, 2011. CHED-1
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- “Green Chemistry Through Collaborative Innovation” Warner, John C. 239<sup>th</sup> ACS National Meeting, San Francisco, CA March 21-25, 2010. ORGN-347.
- “Green Chemistry: A Call to Arms” Warner, John C. 239<sup>th</sup> ACS National Meeting, San Francisco, CA March 21-25, 2010. CHED-1.
- “Town Hall Conversation with California Green Chemistry Initiative” Warner, John C. 239<sup>th</sup> ACS National Meeting, San Francisco, CA March 21-25, 2010. SUST-11
- “There has Never Been a Better Time to Be a Chemist” Warner, John C. 37<sup>th</sup> Northeast Regional Meeting of the American Chemistry Society, Burlington, VT June 29- July 2, 2008. NERM-025
- “Science and Policy Perspectives on Sustainability” Warner, John C. 235<sup>th</sup> ACS National Meeting, New Orleans, LA April 6-10, 2008. IEC-126
- “Green chemistry laboratory and ACS SEED students: A unique match” Trakhtenberg, Sofia; Cannon, Amy S.; Boggs, Roger A.; Warner, John C. *234th ACS National Meeting*, Boston, MA, August 19-23, 2007. CHED-120.
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