

## Prof. Dr. sc. nat. Christoph Weder

Curriculum Vitae, May 5, 2009

### Personal

Nationality Swiss  
Date of birth July 30, 1966; Frankfurt a. M. (Germany)  
Marital status Married, three children

Address Department of Polymer Chemistry and Materials  
Adolphe Merkle Institute  
University of Fribourg  
Rte de l'Ancienne Papeterie / P.O. Box 209  
CH-1723 Marly 1  
Switzerland  
Tel. ++41 (0)26 300 94 65 Fax ++41 (0)26 300 96 24  
christoph.weder@unifr.ch www.am-institute.ch

### General Research Expertise and Interests: Advanced Functional Polymer (Nano)Materials

Design, synthesis, processing and investigation of functional polymers; structure-property relationships of polymers; non-covalent interactions; materials with unusual optic and electronic properties; conjugated polymers; stimuli-responsive materials; biomimetic and biomedical materials.

### Academic Positions

2009 - present **Professor of Polymer Chemistry**, Adolphe Merkle Institute, University of Fribourg, Switzerland

2007 - present **Professor** (since 2008: **F. Alex Nason Professor**)  
Dept. of Macromolecular Science and Engineering and Dept. of Chemistry  
Case Western Reserve University (CWRU), Cleveland OH, USA

2005 - 2008 **Research Scientist**  
Louis Stokes Cleveland Department of Veterans Affairs Medical Center

2003 - present **Visiting Professor**  
Petrochemical College, Chulalongkorn University, Bangkok, Thailand

2001 - 2007 **Associate Professor** (since 2005: **tenured**)  
Dept. of Macromolecular Science and Engineering and Dept. of Chemistry CWRU

1995 - 2000 **Senior Research Associate** and **Independent Lecturer** ("Privatdozent")  
Department of Materials, ETH Zürich, Switzerland, Group of Prof. P. Smith

1994 - 1995 **Postdoctoral Research Fellow**  
Dept. of Chemistry, MIT, Cambridge, USA, Advisor: Prof. M.S. Wrighton

1989 - 1994 **Research and Teaching Assistant**  
Departments of Chemistry and Materials, ETH Zurich, Switzerland

### Academic Education

1995 - 2000 **Habilitation**, Degree awarded: *Venia Legendi* for *Photofunctional Polymers*  
Department of Materials, ETH Zürich, Switzerland  
Habilitation: "Polarizing Light with Polymers"

### **Academic Education (continued)**

- 1990 - 1994      **Dissertation**, Degree awarded: Doctor of Natural Sciences (“Dr. sc. nat.”)  
Department of Materials, ETH Zürich, Switzerland, Advisor: Prof. U.W. Suter  
Thesis: “New Polyamides with Stable Nonlinear Optical Properties”
- 1990 - 1992      **Education as Chemistry Teacher**, Degree awarded: High School and College  
Teacher License (“Fachausweis für das Höhere Lehramt”)  
Institute for Behavioural Sciences, ETH Zürich, Switzerland
- 1985 - 1990      **Undergraduate Studies in Chemistry**, Degree awarded: Masters Degree in  
Chemistry (“Dipl. Chem. ETH”), Thesis: “Synthesis of Cross-Linkable Aramids”  
Department of Chemistry, ETH Zürich, Switzerland, Advisor: Prof. U.W. Suter

### **Industrial Experience**

- 2000 - present    **Consultant for Several Multinational Clients**  
Clients include: Landqart (Switzerland), Pure Fishing Co. (USA), SIG  
(Switzerland), Sumitomo Co. Ltd. (Japan), Toyobo Co. Ltd. (Japan)
- 1994 - present    **Member of Board of Directors**  
Gel Instrumente AG, Thalwil, Switzerland
- 1999 - 2002      **Founding Member and Member of Board of Directors**  
Omlidon Technologies LLC, Zurich, Switzerland

### **Pre-College Education**

- 1980 - 1985      High School at Kantonsschule Enge, Zürich, Switzerland  
Degree awarded: Baccalaureate (“Eidg. Matura Typ E, Wirtschaft”)
- 1972 - 1980      Elementary and Secondary Schools in Mühlheim a. Main, Germany (1972 -  
1974) and Thalwil, Switzerland (1974 - 1980)

### **Languages**

- German            Fluent (native language)
- English            Fluent (oral and written)
- French             Good (oral and written)

### **Awards and Recognitions**

- 2008                F. Alex Nason Professor of Engineering (CWRU)
- 2008                Case School of Engineering Research Award
- 2007, 2008, 2009    Finalist Bruce Jackson Award for Excellence in Undergraduate Mentoring
- 2005                National Science Foundation Special Creativity Award (\$ 192,000)
- 2005                Case School of Engineering Teaching Leader
- 2005                Case School of Engineering Research Leader
- 2002                DuPont Young Professor Award (\$ 75,000)
- 2002                3M Non-Tenured Faculty Award (\$ 15,000)
- 2001                DuPont Aid to Education Award (\$ 10,000)
- 1994                Swiss National Science Foundation Research Fellowship (CHF 45,000)

### **Editorial and Advisory Boards**

2008 - present	Scientific Advisory Board for the Symposium on Stimuli-Responsive Materials
2007 - present	Editorial Advisory Board <i>Macromolecules</i>
2007 - present	International Advisory Editorial Board <i>Journal of Materials Chemistry</i>
2006 – present	Advisory Board <i>Journal of Inorganic and Organometallic Polymers and Materials</i>
2006 – present	International Advisory Board <i>Macromolecular Chemistry and Physics</i>
2006 – present	International Advisory Board <i>Macromolecular Rapid Communications</i>
2001 – present	Editorial Board <i>Journal of Applied Polymer Science</i>

### **Guest Editorship**

2010	<i>Journal of Materials Chemistry</i> Special issue <i>Polymer Synthesis and Applications</i>
2009	<i>Chimia</i> Special issue <i>Swiss Scientists Abroad</i>
2006	<i>Advances in Polymer Science</i> Special issue <i>Poly(arylene ethynylene)s</i>
2000	<i>Macromolecular Symposia</i> Issue on <i>Polymers in Display Applications</i>

### **Evidence of Impact**

My original research papers were cited >1500 times (excluding self-citations). From the most recent publications (last 3 years, too recent to be highly cited), 6 were selected as journal cover (from a total of 14 covers) and 4 were invited highlights/hot paper/feature articles. Current H-index = 26.

### **Current Leadership in Multi-Investigator Collaborations**

*Materials World Network Program* on Dynamic Photonic Crystals, funded by NSF and DFG. The team includes groups of Profs. K. Singer (Physics, CWRU), Kurt Busch (U. Karlsruhe, Germany), M. Steinhart (MPI Halle, Germany), and R. Wehrspohn (Fraunhofer Institut Halle, Germany).

*Biomimetic Dynamic Mechanical Materials Program* funded by NIH and VA-APT. The team includes groups of Profs. S. Rowan (Macromolecular Science, CWRU), Dustin Tyler (Biomedical Engineering, CWRU), and Jeffrey Capadona (VA Hospital, Cleveland, USA).

### **Current Center Affiliations**

*Ernest B. Yeager Center for Electrochemical Sciences*, Case Western Reserve University  
*NSF Center for Layered Polymer Systems (CLIPS)*, Case Western Reserve University

### **Professional Affiliations**

American Chemical Society (ACS); Division Member: POLY and PMSE; Materials Research Society (MRS); Polymer Group of Switzerland (PGS), Swiss Chemical Society (SCS)

### **Co-Organizer / Member Scientific Organizing Committee**

Pacificchem Symposium (2005), Ohio Emerging Technology Forum (2004), European Materials Research Society Meeting (2000), ACS National Meeting Symposia (1999, 2005, 2008), ACES Workshop on Advanced Organic Materials for Optical and Electronic Applications (2007)

### **Reviewer Scientific Journals** (Provided >50 Reviews during the past 12 months)

*Adv. Funct. Mater.*, *Adv. Mater.*, *Angew. Chem.*, *Appl. Phys. Lett.*, *Biomacromol.*, *Chem. Eur. J.*, *Chem. Asian. J.*, *Chem. Comm.*, *Chem. Mater.*, *Eur. J. Org. Chem.*, *J. Appl. Phys.*, *J. Appl. Polym. Sci.*, *J. Am. Chem. Soc.*, *J. Chem. Phys.*, *J. Mater. Chem.*, *J. Mater. Sci.*, *J. Polym. Sci. A & B*, *Langmuir*, *Macromol. Chem. Phys.*, *Macromol. Rapid Commun.*, *Macromolecules*, *Nature*, *Nature Materials*, *New J. Chem.*, *Polymer*, *Science*, *Soft Matter*, *Synthesis*, *Synth. Met.*, and many others.

### **Reviewer Funding Agencies** (Provided >10 Reviews during the past 12 months)

American National Science Foundation, Austrian National Science Foundation, Jumpstart Inc., New Zealand Foundation for Research Science & Technology, Petroleum Research Funds, Swiss National Science Foundation, U.S. Civilian Research and Development Foundation, and others.

### **Current Academic Collaborators**

Prof. Eric Baer, CWRU, Department of Macromolecular Science, Cleveland, OH, USA  
Prof. Felix N. Castellano, Bowling Green State University, Bowling Green OH, USA  
Prof. Stephen Eichhorn, School of Materials, University of Manchester, UK  
Dr. Jeffrey Gilman, NIST, Gaithersburg, MD, USA  
Prof. Patrick Mather, Syracuse University, Depts. of Biomed. & Chem. Eng., Syracuse, NY, USA  
Prof. Robert Moon, Purdue University and US Forest Service-Forest Products Laboratory, USA  
Prof. John Protasiewicz, CWRU, Department of Chemistry, Cleveland, OH, USA  
Prof. Stuart J. Rowan, CWRU, Department of Macromolecular Science, Cleveland, OH, USA  
Prof. Ratana Rujiravanit, Chulalongkorn University, Polymer Program, Bangkok, Thailand  
Prof. David Schiraldi, CWRU, Department of Macromolecular Science, Cleveland, OH, USA  
Prof. Jie Shan, CWRU, Department of Physics, Cleveland, OH, USA  
Prof. Kenneth D. Singer, CWRU, Department of Physics, Cleveland, OH, USA  
Prof. Martin Steinhart, University of Osnabrück, Germany  
Prof. Pitt Supaphol, Chulalongkorn University, Polymer Program, Bangkok, Thailand  
Prof. Dustin J. Tyler, Cleveland VA Medical Center, Cleveland, OH, USA  
Prof. Ralf Wehrspohn, Fraunhofer Institut für Werkstoffmechanik, Halle, Germany  
Prof. Chris Zorman, CWRU, Department of Electrical Engineering, Cleveland, OH, USA

### **Selected Recent Media Coverage (2007-2008)**

#### ***Adaptive Nanomaterials for Biomedical Applications*** (*Science* **2008**, 319, 1370)

3-Sat News (March 7, 2008); BBC News (March 6, 2008); CNN.com (July 4, 2008); Die Welt (March 11, 2008); Discovery Channel (March 7, 2008); Daily Telegraph, London (March 6, 2008); Le Figaro, Paris (March 7, 2008); Financial Times, London (March 7, 2008); M94.5 München (April 27, 2008); MSNBC (March 6, 2008); Neue Zürcher Zeitung (March 12, 2008); Nature Materials (May 2008); Nature Chemistry Podcast (April 2008); New Scientist (March 6, 2008); New York Times (March 11, 2008); Reuters (March 6, 2008); Scientific American (March 6, 2008); Sydney Morning Herald (March 7, 2008); Tages Anzeiger, Zürich (March 7, 2008) and many other print media and websites.

#### ***New Process for Nanocomposite Processing*** (*Nature Nanotechnology* **2007**, 2, 765)

First Science News (January 4, 2008); NanoVip.com (January 4, 2008); Azonano.com (January 7, 2008); Nanotechnology Today (January 18, 2008); Polymer Additive Industry News (January 7, 2008); ScienceDaily (January 7, 2008); VA Watchdog.org and many other websites.

#### ***Polymers with Built-In Temperature-, Mechano- und Chemosensors*** (*J. Mater. Chem.* **2008**, 18, 1082; *J. Mater. Chem.* **2007**, 17, 2989 and others)

ACS Heart Cut (May 21, 2007); Chemical Science (February 28, 2008); Chemical Technology (July 10, 2007); Fuji Sankei Business Eye, Tokyo (November 11, 2007); MRS 360 (March 6, 2008); Novosti Kosmonavtiki (March 3, 2008) and other websites.

#### ***Melt-Processable All-Polymer Laser*** (*Optics Express* **2008**, 16, 10358-10363.)

Optics.org (July 28, 2008); Laser Focus World Magazine (September 2008).

## University Service (at CWRU)

### Committees

2008 - present	Case School of Engineering Executive Committee
2007 - 2008	Case School of Engineering Promotion and Tenure Committee
2005 - 2006	Dept. of Macromolecular Science and Eng. Committee for Strategic Planning
2004 - 2006	Case School of Engineering Committee for Strategic Planning
2004 - 2006	Case School of Engineering Executive Committee
2004 - 2005	University Undergraduate Faculty Executive Committee
2003 - 2004	Case School of Engineering Planning Committee Advanced Materials Institute
2002 - present	Dept. of Macromolecular Science & Eng. 4 Faculty Search Committees
2001 - present	Dept. of Macromolecular Science & Eng. Safety and Facilities Committee
2001 - present	Dept. of Macromolecular Science & Eng. Graduate Teaching Committee
2001 - present	>25 Committees for Oral Proposal, Dept. of Macromol. Science & Eng.
2001 - present	>25 Committees for the Ph.D. in the Departments of Macromolecular Science & Eng., Chemistry, Biomedical Engineering, and Physics

### Recruiting, Outreach, Advising

2004 - present	<i>Discovery Day</i> . Initiated a high-impact outreach initiative in collaboration with the Cleveland Museum of Natural History. Each year 900 visitors tour a specially tailored 20-minute hands-on polymer exhibit (>4800 visitors since 2004).
2002 - present	<i>Polymer Science Days</i> . Initiated an enrichment program in collaboration with the Cleveland Museum of Natural History. Each year a class of ca. 15 Future Scientists spends a day in our labs (>100 <i>Future Scientists</i> since 2002).
2006 - present	<i>Science for Kids</i> . Initiated a motivational outreach program for the 4 <sup>th</sup> grade classes of an elementary school in Shaker Heights, OH. We bring hands-on experiments to school, to show that not only careers in baseball and football but also science and technology can be cool (>480 students since 2006).
2003 - present	<i>Academic Advisor</i> of >30 undergraduate students.
2002 - present	<i>Connect with CWRU</i> . Introduction of the Macromolecular Science Curriculum to potential undergraduate students.

## Research Advisor of Postdoctoral Researchers (10)

Dr. Lorraine Hsu	“Bio-Inspired, Stimuli-Responsive Polymers “ (2009-present)
Dr. Liming Tang	“Polymers with Integrated Sensing Capabilities“ (2006-present)
Dr. O. Van den Berg	“Semiconducting Polymer Nanowires” (2006-2007, now Researcher OCAS)
Dr. M. Schroeter	“Conducting Poly( <i>p</i> -phenyleneethynylene)s” (2005-2007, now Teamleader GKSS)
Dr. Jeff Capadona	“Bio-Inspired, Stimuli-Responsive Polymers” (2005-2008, now Researcher VA)
Dr. Dan Knapton	“Organic/Inorganic Hybrid Polymers” (2004-2006, now Teamleader Lubrizol)
Dr. Param Iyer	“Organic/Inorganic Hybrid Polymers” (2003-2004, now Professor IIT)
Dr. Quinghui Chu	“Proton-Conducting Membranes” (2002-2004, now Researcher U. Akron)
Dr. M. Schroers	“Smart Materials with Controllable Stiffness” (2002-2003, now Engineer BASF)
Dr. Anja Palmans	“Light-Polarizing Polymers” (1999-2000, now Professor TU Eindhoven)

### **Host of Visiting Scientists (2)**

Dr. Maki Kinami Toyobo Research Center, Shiga, Japan (2004-2006)

Dr. C. Löwe EMPA, Dübendorf, Switzerland (2001-2002)

### **Research Advisor of Ph.D. Students (14)**

Kadhir Shanmuganathan “Responsive Polymers for Cortical Electrodes” (2006-present)

Brian Makowski “Dynamic Photonic Crystals” (2006-present)

Joe Lott “Functional Multilayer Polymer Films” (2006-present)

Mark Burnworth “Synthesis of Organic/Inorganic Hybrid Polymers” (2005-present)

James Mendez “Charge Transport in Conjugated Polymers” (2005-present)

Jill Kunzelman “Polymers with Integrated Sensing Capabilities” (2004-2009, now PolyOne)

Brent Crenshaw “Polymer Chameleons” (2002-2006, now Bayer MaterialScience)

Akshay Kokil “Conjugated Polymer Networks” (2001-2005, now U. Mass. Lowell)

Sven Zimmermann “Orientation of Discotic Liquid Crystals” (U. Marburg 2004, now Novaled)

Christoph Kocher “Anisotropic Functional Polymer Systems” (1999-2003, now Landqart)

Moritz Ehrenstein “Polyamides with Long Alkane Segments” (1999-2003, now BASF)

Andrea Montali “Light-Emitting Polymer Displays” (1996-1999, now Synthes)

R. Chandrakanthi “Investigation of Pernigraniline” (1996-1999, now Professor U. Peradeniya)

Daniel Steiger “Poly(*p*-phenylene alkylene)s” (1996-1999, now Researcher Ethicon Products)

### **Research Advisor of Master Students (15)**

Charles Sing “Polymeric Threshold Temperature Sensors” (2008, now MIT)

James Kostka “Light-Emitting Polymers” (2008-present)

Claire Rademaker “Synthesis of Conjugated Polymer Networks” (2005-2006, now USPTO)

Eric Hittinger “Conjugated Polymer Networks” (2002-2003, now US Army SLAA)

Ravi Tangirala “Photo-Patternable Nanomaterials” (2002-2003, now U. Mass. Amherst)

Christian Huber “Conjugated Polymer Networks” (2001, now Researcher EMPA)

Katharina Sigg “Optical Sealing of Polymers” (2001)

Christoph Kocher “Patterning of Functional Polymer Systems” (2000, now Landqart)

Magnus Kristiansen “Proton-Conducting Membranes” (2000, now Ciba Specialty Chemicals)

Michael Eglin “Thermoplastic Processing of Photoluminescent Polarizers” (1999)

Simon Amhof “Polarizing Energy Transfer in Photoluminescent Polymers” (1998)

Claude Curti “Poly(*p*-phenylene ethynylene) Light-Emitting Diodes” (1998)

Florian Dötz “Synthesis of Novel Poly(*p*-phenylene ethynylene)s” (1997)

Moritz Ehrenstein “Poly(*p*-phenylene alkylene)s - a Class of Forgotten Polymers” (1997)

Christian Sarwa “Polarized Light Emission from Oriented Polymers” (1997)

Listed are students who graduated with a M.S. from CWRU or a “Diplom” from ETHZ.

### **Research Advisor of Undergraduate Students (~45)**

### **Academic Advisor of Undergraduate Students (~30)**