

The background of the entire page is a repeating pattern of various chemistry-related icons. These include Bohr-style atomic models with three elliptical orbits, Erlenmeyer flasks, beakers, microscopes, and radiation symbols. The icons are rendered in a variety of colors including red, yellow, blue, and purple, set against a dark teal background.

THE COUNCIL FOR
CHEMICAL RESEARCH

2009

YEAR IN REVIEW



2009

THE COUNCIL FOR CHEMICAL RESEARCH
YEAR IN REVIEW

TABLE OF CONTENTS

Letter from the Chair	4
30 Years of Advancing Collaborative Research	6
CCR Strategic Framework	7
Meetings and Workshops	8
Advocacy for Chemical Research	12
Awards	14
Action Networks	15
CCR Leadership	17
CCR Member Organizations	18

LETTER FROM THE CHAIR



Gregory S. Girolami
Professor of Chemistry
2009 CCR Chair

The Council for Chemical Research's name only begins to describe its key and vital role in society. It is first and foremost a strong and effective champion of research in the chemical sector, for the betterment of the economy, quality of life, and national security. CCR fosters mutually beneficial – and often profitable – collaborations across sectors, it works to improve the education of the next generation of chemists and chemical engineers, and it argues for responsible federal appropriations, law, and standards relating to the chemical sciences.

I and the organization I represent have benefitted tremendously from the interactions, knowledge, and professional contacts that have come from participation in CCR's activities. I know that the same is true for many other CCR members and member organizations, although like many things in life, what you get out depends on what you put in.

But the ability of CCR to continue to make a difference and to improve the chemical science enterprise is a fragile thing. The year 2009 was an especially difficult one, owing to the very real financial stresses that forced some member organizations to opt out, at least temporarily, from supporting CCR.

At the beginning of 2009, CCR's President, Dr. Hrach Semerjian, and CCR's Governing Board considered whether it would be best to trim the organization to bring expenses in line with income. We decided that CCR is already very lean, and that reducing its size would unacceptably render it less effective and useful. We resolved instead to use our capital reserves to make CCR not less but more useful to its members and to society. And we are doing exactly that.

One result of our resolve is that CCR reorganized its financial structure to enable it to bring Mr. Paul Mendez on board in September as CCR's Executive Director.



Working together, Mr. Mendez and President Semerjian have already brought increased energy and capability to CCR. Several exciting and important new projects are now underway, and I am convinced that CCR will be of increasingly greater value to its members and to society in the future.

I urge you to stay involved – or become involved – in CCR. If you care about the chemical sciences (for either altruistic or non-altruistic reasons!), you should support CCR and what it does.

It has been a privilege to serve as Chair of CCR's Governing Board in 2009.

Gregory S. Girolami
Professor of Chemistry
2009 CCR Chair

CCR FOSTERS
MUTUALLY
BENEFICIAL
COLLABORATIONS
ACROSS SECTORS



30 YEARS OF ADVANCING COLLABORATIVE RESEARCH



In 1979, Mac Pruitt – then VP for Research at the Dow Chemical Company – convened a meeting of leading research executives from the nation’s major chemical companies and research universities. His goal was to enhance trust and collaboration between the public and private sector research communities. Out of this first meeting was born the Council for Chemical Research.

Over the past three decades, facilitating networking and collaboration – both within and across sectors and disciplines – has remained CCR’s mission. Membership in CCR opens doors for researchers across the US and around the world. CCR has published groundbreaking studies documenting the societal return of investment in chemical R&D since 2001. Today, CCR is an influential voice in Washington, working constantly to advocate for more investment in US chemical R&D.

CCR is a not-for-profit organization whose members are companies, universities and government laboratories that conduct research in chemistry, chemical engineering and related disciplines in the US. Member Representatives are influential leaders who can make personal and organizational commitments to ensure that chemistry-related research fulfills its potential in creating a better world. Smaller companies and international organizations can also participate in CCR activities as Affiliate Members.

**TODAY, CCR IS AN
INFLUENTIAL VOICE
IN WASHINGTON,
WORKING CONSTANTLY
TO ADVOCATE FOR MORE
INVESTMENT IN U.S.
CHEMICAL R&D.**



CORE VALUES

Research in chemistry, chemical engineering, and other chemistry-related fields is essential to progress in health, quality of life, and economic prosperity.

Research is central to the educational process, especially at post-graduate levels. It prepares new professionals and is a key partner in the process of discovery, innovation, and development of basic and applied knowledge.

Chemical science and engineering perspectives play a central role in many disciplines.

Research, education, and applications draw the maximum leverage from collaborative approaches.

GOALS

Advocate for Investment in Chemistry-Related Research.

Increase Collaboration Among Research Leaders.

Address an Ongoing Agenda of Chemistry-Related Societal Issues.

Enrich Graduate Education in Chemistry, Chemical Engineering, and Chemistry-Related Fields.

VISION

CCR will profoundly influence the success of chemistry-related science and engineering research in serving society.

STRATEGIC FRAMEWORK

MISSION

CCR's purpose is to benefit society by advancing research in chemistry, chemical engineering, and related disciplines through leadership collaboration across discipline, institution, and sector boundaries.



MEETINGS AND WORKSHOPS

A MAJOR CCR ACTIVITY IS ORGANIZING AND HOSTING MEETINGS – LARGE AND SMALL – DESIGNED TO BRING TOGETHER TOP LEADERS IN THE CHEMICAL RESEARCH ENTERPRISE TO ADDRESS TIMELY ISSUES CRITICAL TO THE ONGOING SUCCESS OF AMERICA'S CHEMICAL INDUSTRY.

30TH ANNIVERSARY ANNUAL MEETING

The Business of Water:

Problems, Solutions, and Opportunities for the Chemical Enterprise

In April, over 120 leaders in chemical research gathered in Salt Lake City for CCR's 30th Anniversary Annual Meeting. The theme of the meeting was addressed through a series of informative plenary sessions addressing the Agriculture-Water Nexus, the Environment-Water Nexus, and the Energy-Water Nexus. These sessions examined the importance of water as both a resource need and a business opportunity.



2009 Annual Meeting Chair Seth Snyder (at podium)

Given the uncertainty in the world economy and its impact on the chemical enterprise, CCR added a special session to this year's meeting. A panel of senior federal program managers from the R&D agencies that influence the chemical enterprise was convened to review the status of funding opportunities in the American Recovery and Reinvestment Act (ARRA) as well as in 2009 and 2010 federal appropriations bills. The panel was followed by breakout sessions to enable attendees to probe for specific opportunities and collaborations that could benefit their organizations.





CCR President Hratch Semerjian

In addition, the Annual Meeting featured two leadership skills training workshops, one for new department and center chairs, and another for graduate students and postdocs. There were also valuable sessions on building networking soft skills, marketing technology and technology transfer issues.

Annual Meeting support was provided by Argonne Laboratories, NIST, NSF and the University of Utah.



Past Chairs Assembled for CCR's 30th Anniversary

2009

ANNUAL MEETING PLANNING COMMITTEE

- Seth Snyder**; Argonne National Laboratory (chair)
- Kelly Sullivan**; Pacific Northwest National Laboratory (co-chair)
- Rommie Amaro**; University of California, Irvine
- Jennifer Anthony**; Kansas State University
- Gretchen Baier**; The Dow Chemical Company
- Mark Benvenuto**; University of Detroit Mercy
- Gary Emmert**; University of Memphis
- Lou Graziano**; The Dow Chemical Company
- Teresa Grocela**; GE Global Research
- JoAnn Lighty**; University of Utah
- Richard Okine**; E.I. DuPont de Nemours & Co
- Mark Pepple**; University of Florida
- Eric Peterson**; Idaho National Laboratory
- Wayne Ranbom**; Arkema
- Terry Ring**; University of Utah
- Sachin Velankar**; University of Pittsburgh





A VENUE FOR WORLD-LEADING EXPERTS

2009 NICHE WORKSHOP

Micro-Reactor Technologies:

A Critical Tool for Process Optimization and Intensification.

In September, CCR brought together over 45 R&D leaders for a New Industrial Chemistry and Engineering (NICHE) workshop on micro-reactors. The purpose was to educate the chemical science and technology research community about state-of-the-art micro-reactor technology and related enabling technologies. The sessions were designed to give a rationale for the use of micro-reactors for R&D as well as production; describe technological advances and applications of micro-reactors; and feature a variety of case studies as well as other enabling technologies such as sensors, separations etc.

The meeting provided a venue for world-leading experts to describe transformational technology and lead animated discussions that included topics from green and novel chemistries to innovative process and product design.

Conference support was provided by the US EPA, Corning, 4Rivers , CPAC, and NIST.



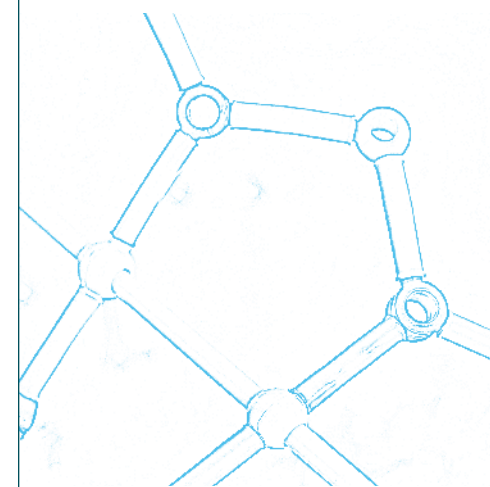
THE VALUE OF CHEMICAL RESEARCH - PHASE III WORKSHOP

Assessing and Enhancing the Impact of R&D in the U.S. Chemical Sciences

In November, CCR organized a workshop on determining the optimal level of investment in chemical R&D. The event brought together academic scholars in economics and finance, chemical and pharmaceutical industry experts, and federal policymakers to discuss the state of knowledge about the impact of science R&D in the United States, focusing on chemical sciences and related industries. The workshop was intended to advance understanding of how to characterize an optimal portfolio of R&D investment in the chemical sciences, and what economic analyses could be used to guide a public-sector support strategy.

The timing of the workshop was particularly opportune, given the importance of science R&D in the centerpiece of the American Recovery and Reinvestment Act of 2009.

Conference support was provided by the NSF.



**TO DISCUSS
THE STATE OF
KNOWLEDGE
ABOUT THE
IMPACT OF
SCIENCE R&D IN
THE U.S.**



ADVOCACY FOR CHEMICAL RESEARCH

One of the **objectives**

of CCR's strategic framework is to be
an effective and proactive resource

on public policy issues. **Key audiences**

include Congress, federal funding agencies,

and the media. **CCR's role** as the advocate

for the US chemical research enterprise was

especially welcomed in 2009 as the new

Obama Administration selected its science and

technology staff. **Advocacy priorities**

in 2009 were strategies for growing chemical

manufacturing in the US and realizing the

current administration's goal of bringing R&D

investment to **3% of GDP.**



ECONOMIC STIMULUS AND INVESTMENT IN RESEARCH

The financial crisis that began in 2008 continued to present huge challenges to the chemical industry and the entire world economy in 2009. CCR helped policy makers understand the importance of continued investment in R&D and in July published a Position Paper on the Permanent Research and Development Tax Credit.

POSITION STATEMENTS

CCR issued Position Statements on the president's 2010 budget for federal agencies which fund research in the chemical sciences, including the Departments of Agriculture, Defense, and Energy; the National Institutes of Health, National Institute of Standards and Technology, and the National Science Foundation.

CONGRESSIONAL VISITS

In April, CCR staff and volunteers met with key Congressional officials and staff to educate them on the criticality of continued investment in R&D to the recovery of the economy and future US job growth.

AGENCY VISITS

In December, CCR staff and volunteers met for two days with top officials from key federal agencies that fund science and technology research. By bringing together funders, industry and academia, CCR helped create a shared vision for keeping the US competitive, and identified topics of mutual interest for future CCR events.



AWARDS

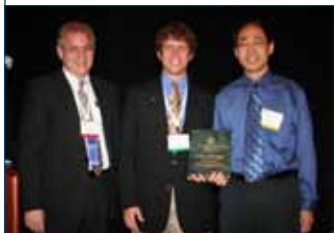
EACH YEAR, CCR
RECOGNIZES
INDIVIDUALS AND
GROUPS WHO HAVE
MADE OUTSTANDING
CONTRIBUTIONS TO
THE U.S. CHEMICAL
RESEARCH ENTERPRISE
AT ITS ANNUAL
MEETING.



Thomas Edgar



Christine Grant



CCR Collaboration Success Award
recipients

2009

MALCOLM E. PRUITT AWARD

Thomas Edgar (University of Texas Austin)

For advancing the chemical enterprise through mutually beneficial interactions among industry, universities and government.

2009

CCR DIVERSITY AWARD

Christine Grant (North Carolina State University)

For advancing and promoting diversity within and among the three CCR sectors.

2009

CCR COLLABORATION SUCCESS AWARD

“Process Analytical Technology for Pharmaceutical Crystallization”

Principal Collaborators:

Merck & Company, Inc. — Hsien-Hsin Tung, George X. Zhou, Brian K. Johnson, Omar Davidson, Yongkui Sun, Cindy Starbuck and Zhihong Ge

University of Illinois at Urbana-Champaign — Richard D. Braatz, Mitsuko Fujiwara, Zoltan K. Nagy, Timokleia Togkalidou, Xing Yi Woo, Serena H. Chung, David L. Ma, Effendi Rusli and Shefali Patel.



THERE IS ONE ACTION NETWORK FOR EACH GOAL AS STATED IN THE CCR STRATEGIC FRAMEWORK:

ACTION NETWORK TO ADVOCATE FOR RESEARCH INVESTMENT

Leaders:

Susan Butts
The Dow Chemical Company

Terry Ring
University of Utah

Matthew Tarr
University of New Orleans

In addition to playing an active role in the development of CCR's Position Statements and organizing Congressional Visit Day and Agency Visit Day, in May this Network created a Position Paper on innovation as a tool to revitalize the US manufacturing base that was used to inform key stakeholders during passage of the American Recovery and Reinvestment Act of 2009.

ACTION NETWORK TO ADVANCE RESEARCH COLLABORATION

Leaders:

Dady Dadyburjor
West Virginia University

Michael Gonzalez
EPA

Wayne Ranbom
Arkema

This Network was responsible for planning the September NICHÉ workshop in micro-reactors. In addition, in 2009 it published the CCR Collaboration Manual with tools to identify when it is in everyone's best interests to collaborate; ways to move rapidly and successfully to establish the collaboration; and differences between managing successful R&D projects and successful R&D collaborations in order to maximize the benefits of the relationship.

ACTION NETWORKS

ACTION NETWORKS ARE THE KNOWLEDGE-BASED COMMUNITIES OF VOLUNTEERS THAT CARRY OUT THE MISSION OF CCR. PARTICIPATION IS OPEN TO REPRESENTATIVES OF ANY CCR MEMBER ORGANIZATION.



**ACTION NETWORKS
ARE RESPONSIBLE
FOR INITIATING AND
EXECUTING ACTIVITIES
TO FULFILL CCR'S
GOALS.**

**ACTION NETWORK TO ADDRESS
LONG-RANGE SOCIETAL ISSUES**

Leaders:

Mark Benvenuto
University of Detroit Mercy

Jose Bravo
Shell Corporation

Russ Rhinehart
Oklahoma State University

By tracking a wide range of emerging issues that cut across all the other CCR goals and activities, this Network's mission is to provide a roadmap for future CCR initiatives. Topics as varied as the climate change and sustainability, globalization and tax policy, joint appointments and shared human resources, and adapting the graduate school experience to today's multi-disciplinary work environment are just some of the subjects that were explored in 2009.

**ACTION NETWORK TO ENRICH
GRADUATE EDUCATION**

Leaders:

Tim Anderson
University of Florida

Jim Hill
Iowa State University

Charles W. Manke
Wayne State University

Kelly O. Sullivan
Pacific Northwest National Laboratory

The Graduate Education Action Network surveys chemistry and chemical engineering departments at US universities to capture best practices in graduate education and as well as other relevant information. In 2009 effort was devoted to a survey of department chairs to understand the impact of the economic downturn on graduate education. The survey was aimed at understanding how the economy is affecting hiring, graduate recruiting, budgets, grant success and graduate stipends and the impact of stimulus funding on research programs.



GOVERNING BOARD OFFICERS

Chair:	Gregory Girolami; University of Illinois at Urbana-Champaign
1st Vice Chair:	Seth Snyder; Argonne National Laboratory
2nd Vice Chair:	Terry Ring; University of Utah
Past Chair:	John McDermott; GE Global Research
Treasurer:	Marc Donohue; Johns Hopkins University
Secretary:	Susan Butts; The Dow Chemical Company
President:	Hratch Semerjian; Council for Chemical Research
Executive Director:	C. Paul Mendez

GOVERNING BOARD MEMBERS

Gretchen Baier; The Dow Chemical Company
Mark Benvenuto; University of Detroit Mercy
Gary Calabrese; Corning
Richard Cavanagh; NIST
Sue Clark; Washington State University
Pat Confalone; E.I. DuPont deNemours & Co.
Stuart Cooper; Ohio State University
Dady Dadyburjor; West Virginia University
Michael Doyle; University of Maryland
Luis Eschegoyen; Clemson University
Joseph Francisco; Purdue University
Julia Fulghum; University of New Mexico
Louis Graziano; The Dow Chemical Company
Jennifer Holmgren; UOP, LLC
Wayne Ranbom; Arkema, Inc
Mary Jane Shultz; Tufts University
Kelly Sullivan; Pacific Northwest National Lab
George Zima; Eastman Chemical Company

CCR LEADERSHIP



CCR MEMBER ORGANIZATIONS

INDUSTRY

Arkema, Inc.
Ciba Specialty Chemicals Corporation
Corning, Inc.
The Dow Chemical Company
E.I. DuPont de Nemours & Co.
ExxonMobil Corporation
GE Global Research
General Motors Corporation
Invista
Nalco Company
Shell Global Solutions (US) Inc.
Tate & Lyle Ingredients Americas
UOP, LLC

ACADEMIA

Auburn University
Baylor University
Boston University
Bowling Green State University
Brown University
California Institute of Technology
Carnegie Mellon University
Case Western Reserve University
Central Michigan University
Clemson University
Colorado State University
Cornell University
Dartmouth College
Duquesne University
Florida Institute of Technology
Georgetown University
Georgia Inst. of Technology
Illinois Institute of Technology
Iowa State University
Jackson State University
Johns Hopkins University
Kansas State University
Kent State University
Lehigh University
Louisiana State University
Marquette University
Massachusetts Inst. of Technology

Miami University of Ohio
Michigan State University
Michigan Technological University
Mississippi State University
Missouri University of Science and Technology
Montana State University
N. C. State University, Textiles
New Jersey Inst. of Technology
North Carolina Central University
North Carolina State University
Northern Illinois University
Northwestern University
Ohio State University
Ohio University
Oklahoma State University
Oregon State University
Pennsylvania State University
Polytechnic University
Prairie View A&M University
Princeton University
Purdue University
Rice University
Seton Hall University
South Dakota State University
Stanford University
SUNY – ESF
SUNY at Buffalo
SUNY at Stony Brook



Syracuse University
Texas A&M University
Texas Christian University
Texas Tech University
Tufts University
Tulane University
University of Akron
University of Alabama
University of Alabama at Birmingham
University of Arizona
University of Arkansas
University of California, Berkeley
University of California, Irvine
University of California, Santa Barbara
University of Chicago
University of Cincinnati
University of Connecticut
University of Delaware
University of Denver
University of Detroit Mercy
University of Florida
University of Houston
University of Illinois at Chicago
University of Illinois at Urbana
University of Iowa
University of Kansas
University of Maryland
University of Massachusetts

University of Memphis
University of Michigan
University of Minnesota
University of Mississippi
University of Missouri-Kansas City
University of Nebraska
University of New Hampshire
University of New Mexico
University of New Orleans
University of North Dakota
University of North Texas
University of Notre Dame
University of Oregon
University of Pennsylvania
University of Pittsburgh
University of Rhode Island
University of Rochester
University of South Carolina
University of Tennessee
University of Texas at Arlington
University of Texas at Austin
University of Toledo
University of Utah
University of Virginia
University of Washington
University of Wisconsin-Madison
University of Wisconsin-Milwaukee
Vanderbilt University

Virginia Commonwealth University
Virginia Polytechnic & State University
Washington State University
Washington University-St. Louis
Wayne State University
West Virginia University
Worcester Polytechnic Institute

GOVERNMENT LABORATORIES

Argonne National Laboratory
Idaho National Laboratory
National Energy Tech Laboratory (NETL)
National Institute of Standards and
Technology
National Research Council of Canada
EPA/National Risk Management Research
Laboratory
Oak Ridge National Laboratory
Pacific Northwest National Laboratory
Sandia National Laboratories
Savannah River Company

AFFILIATES

GreatPoint Energy
National University of Singapore
Reaction Design
RTI International
Scientific Design Co., Inc.

COUNCIL FOR CHEMICAL RESEARCH

1550 M Street NW, Suite 300

Washington DC 20005

Phone: 202-429-3971

Fax: 202-429-3976

www.ccrhq.org