Labor Health and Human Services, Education, and Related Agencies
Witness Disclosure Form

Clause 2(g) of rule XI of the Rules of the House of Representatives requires non-governmental witnesses to disclose to the Committee the following information. A non-governmental witness is any witness appearing on behalf of himself/herself or on behalf of an organization other than a federal agency, or a state, local or tribal government.

Your Name, Business Address, and Telephone Number: [redacted]
Dr. Mark A. Barteau
Senior Vice Provost for Research and Strategic Initiatives
University of Delaware
[redacted]

1. Are you appearing on behalf of yourself or a non-governmental organization? Please list organization(s) you are representing.

University of Delaware and Delaware IDeA Program

2. Have you or any organization you are representing received any Federal grants or contracts (including any subgrants or subcontracts) since October 1, 2008?

Yes ~~No~~

3. If your response to question #2 is "Yes", please list the amount and source (by agency and program) of each grant or contract, and indicate whether the recipient of such grant or contract was you or the organization(s) you are representing.

NIH-IDeA Program funding to UD:

Delaware INBRE, FY 2008 - FY 2012	–	$25,000,000
3 COBRE Programs, FY 2008 - FY 2012	–	$28,000,000

Overall NIH Funding to UD, FY 2008 - 2012 – $109,000,000

Overall Federal Funding to UD, FY 2008 - FY 2012 – $432,000,000

Signature: [redacted] Date: March 26, 2012

CURRICULUM VITAE

MARK A. BARTEAU

ADDRESS

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University of Delaware
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E-MAIL: barteau@udel.edu
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EDUCATION

1981	Ph.D. Chemical Engineering (Chemistry minor), Stanford University
1977	M.S.Ch.E. Stanford University
1976	B.S.Ch.E. Washington University

PRESENT POSITION, UNIVERSITY OF DELAWARE

Senior Vice Provost for Research and Strategic Initiatives
Robert L. Pigford Endowed Chair of Chemical Engineering
Professor of Chemistry & Biochemistry
Associate Director, Center for Catalytic Science and Technology

PROFESSIONAL EXPERIENCE

University of Delaware

2008-	Senior Vice Provost for Research and Strategic Initiatives
2007-2008	Founding Director, University of Delaware Energy Institute
2005-	Robert L. Pigford Endowed Chair of Chemical Engineering
2000-2007	Chairperson, Department of Chemical Engineering
1996-2000	Director, Center for Catalytic Science and Technology
1994-2005	Robert L. Pigford Professor of Chemical Engineering
1990-1994	Professor of Chemical Engineering
1990-	Professor of Chemistry
1987-1990	Associate Professor of Chemical Engineering and Chemistry
1982-1996, 2000-	Associate Director, Center for Catalytic Science and Technology
1982-1987	Assistant Professor of Chemical Engineering

Other

1997	Visiting Professor of Chemistry, University of Auckland
1991-1992	Visiting Professor of Chemical Engineering, University of Pennsylvania
1981-1982	NSF Postdoctoral Fellow, Institut für Festkörperphysik, Physik Department, Technische Universität München

AWARDS AND RECOGNITION

2010	Fellow, American Institute of Chemical Engineers
2009	Guiseppe Parravano Award, Michigan Catalysis Society

2008	Named as one of the "One Hundred Engineers of the Modern Era" by the American Institute of Chemical Engineers
2006	National Academy of Engineering
2004	Francis Alison Award, University of Delaware
2001	Alpha Chi Sigma Award for Chemical Engineering Research, American Institute of Chemical Engineers
2001	Catalysis Club of Philadelphia Award
1998	International Catalysis Award, International Association of Catalysis Societies (inaugural recipient)
1995	Ipatieff Prize, American Chemical Society
1993	Canadian Catalysis Lecture Tour Award (inaugural recipient), Catalysis Division, Chemical Institute of Canada
1993	Paul H. Emmett Award in Fundamental Catalysis, The Catalysis Society
1991	Allan P. Colburn Award, American Institute of Chemical Engineers
1988 & 1989	Innovation Recognition Award, Union Carbide Corporation
1988	Ernest W. Thiele Lectureship, University of Notre Dame
1988	Outstanding Young Men of America
1985	Presidential Young Investigator Award, National Science Foundation
1982	Victor K. LaMer Award, Division of Colloid and Surface Chemistry, American Chemical Society
1981-1982	NSF Postdoctoral Fellowship
1976-1979	NSF Graduate Fellowship
1973-1976	Langsdorf Engineering Fellowship
1973-1976	National Merit Scholarship

PATENTS

US 5,475,144: Catalyst and Process for Synthesis of Ketenes from Carboxylic Acids, P.C. Watson, M. C. Libby, and M. A. Barteau, issued December 12, 1995.

US 6,232,504: Functionalized Monolith Catalyst and Process for Production of Ketenes, M. Barteau, M. C. Huff, U. Pogodda, and R. Martinez-Rey, issued May 15, 2001.

PROFESSIONAL ACTIVITIES

- Co-Instructor, Industrial Short Course "Chemistry of Catalytic Processes" (>25 times since 1983), including courses for the following organizations:

Alcoa	Exxon	Phillips	UOP
Amoco Chemical	LaRoche Industries	Sun	
ARCO Chemical	Los Alamos National Laboratory	Union Carbide (×3)	

- Associate Editor, "AIChE Journal," American Institute of Chemical Engineers (1998-2005)
- Associate Editor, "Topics in Chemical Engineering," Oxford University Press
- Past Associate Editor, "Journal of Vacuum Science and Technology A," American Vacuum Society
- Member, Editorial Board, "Industrial and Engineering Chemistry Research" (2005-2008)
- Member, Editorial Board, "Journal of Catalysis"

- Member, Editorial Board/Scientific Advisory Board, “Catalysis Letters” and “Topics in Catalysis”
- Member, Editorial Board, “Journal of Molecular Catalysis A: Chemical”
- Member, Editorial Board, “Catalysis Communications” (2000-2006)
- Member, Consulting Committee, “Journal of Chemical Industry and Engineering” (China)
- Member, Editorial Board, “Industrial Catalysis News” (1998–1999)
- Co-Chair (2010-2013) and Member (2007-2010), Chemical Sciences Roundtable, National Research Council
- Member, Panel on Chemical Science and Technology, National Research Council
- Member, Committee on the Review of the Basic Energy Sciences Catalysis Science Program, National Research Council; report: “Catalysis for Energy,” National Academies Press (2009)
- Member, Governing Board, Council for Chemical Research (2002-2004)
- Member, Board of Directors, Catalysis and Reaction Engineering Division, American Institute of Chemical Engineers (1999-2001)
- Member, Department Advisory Council, Department of Chemical Engineering, Lehigh University
- Member, Department Advisory Board, Department of Chemical Engineering, University of California Santa Barbara
- Member, Advisory Board of Science and Technology, National Institute of Clean-and Low-Carbon Energy (NICE) China
- Panel Lead, Committee of Visitors, US Department of Energy, Office of Science, Division of Chemical Sciences, Geosciences and Biosciences (2011)
- Member, National Academy of Engineering Foundation Audit Committee
- Member, National Academy of Engineering, Chemical Engineering Peer Committee (2010-2012)
- Member, American Institute of Chemical Engineers Awards Committee
- Co-Chair, Council for Chemical Research Workshop on Catalysis for Alternative Energy
- Member, Board of Trustees, Southeastern Universities Research Association
- Chair, Environmental Working Group, Delaware State Energy Plan (2008-2009)
- Member, Advisory Committee, Center of Research Excellence in Petroleum Refining and Petrochemicals, King Fahd University of Petroleum and Minerals, Dhahran, Saudi Arabia (2008-2009)
- Member, Science Advisory Committee, Environmental Molecular Sciences Laboratory, Pacific Northwest National Laboratory
- Member, Department Advisory Council, Department of Chemical Engineering, Washington University (1997-2006)
- Member, Steering Committee, “Challenges for the Chemical Sciences in the 21st Century,” National Research Council (1999-2003)
- Chairman (2002) and member (2000-2001), “Council on Chemical Sciences,” US Department of Energy, Office of Science
- Member, Board of Directors, Catalysis Club of Philadelphia (1996–97, 1998–99)

- Member, Canvassing Committee, ACS Award in Colloid or Surface Chemistry (1991–93)
- Chairman, Continuing Symposium on Molecular Processes at Solid Surfaces, ACS Division of Colloid and Surface Chemistry (1992–95)
- Member, Task Force to Monitor *Langmuir*, Committee on Publications, ACS (1988)

- Professional Society Memberships

AIChE	ASEE
ACS	Catalysis Society
AAAS	Materials Research Society
AVS	Sigma Xi
	Tau Beta Pi

INVITED LECTURES

Department of Physical Chemistry, University of Innsbruck, Innsbruck, Austria (February 1982).
Victor K. LaMer Award Lecture, 56th Colloid and Surface Science Symposium, American Chemical Society, Blacksburg, VA (June 1982).
Department of Chemistry, University of Delaware (February 1983).
Air Products and Chemicals, Allentown, PA (October 1983).
Aluminum Company of America, Alcoa Technical Center, Alcoa, PA (November 1983).
University of Delaware Research Foundation Annual Meeting (January 1984).
Surface Physics Colloquium, University of Pennsylvania (March 1984).
Catalysis Seminar Series, Carnegie Mellon University–University of Pittsburgh (March 1984).
Exxon Research and Engineering, Annandale, NJ (July 1984).
Union Carbide, South Charleston, WV (November 1984).
Surface Science Seminar Series, Princeton University (February 1985).
Johnson Matthey, Wayne, PA (July 1985).
Council for Chemical Research Annual Meeting, Wilmington, DE (October 1985).
Department of Chemistry, University of Delaware (November 1985).
Texaco, Beacon, NY (February 1986).
Rohm and Haas Co., Spring House, PA (March 1986).
Dow Chemical Co. New England Labs, Wayland, MA (April 1986).
Department of Chemical Engineering, Yale University (April 1986).
David M. Mason Lectures, Department of Chemical Engineering, Stanford University (May 1986).
Dow Chemical Co., Midland, MI (June 1986).
Department of Chemical Engineering, University of Washington (October 1986).
Amoco Chemical Co., Naperville, IL (October 1986).
Department of Chemical Engineering and Materials Science, University of Minnesota (November 1986).
E. I. du Pont de Nemours & Co., Wilmington, DE (December 1986).
Phillips Petroleum, Bartlesville, OK (February 1987).
Catalysis Club of Chicago (March 1987).
Amoco Oil Co., Naperville, IL (March 1987).
Department of Chemical Engineering, University of Florida (March 1987).
Mobil Research and Development Co., Paulsboro, NJ (May 1987).
Sun Refining and Marketing Co., Marcus Hook, PA (November 1987).
Chevron Research, Richmond, CA (December 1987).
Tri-State Catalysis Club, Charleston, WV (January 1988).
Texaco, Beacon, NY (March 1988).
Union Carbide Innovation Recognition Program Symposium (June 1988).
US-Japan Catalysis Seminar (July 1988).
Department of Chemical Engineering, Washington University (July 1988).
Exxon Research and Engineering, Annandale, NJ (September 1988).
Ernest W. Thiele Lecture, Department of Chemical Engineering, University of Notre Dame (October 1988).
BP Americas, Cleveland, OH (February 1989).
Department of Chemical Engineering, University of Illinois (March 1989).

Union Carbide Innovation Recognition Program Symposium (May 1989).
Ninth International Symposium on C_1 Reactions, Kingston, Ontario (July 1989).
Advances in Catalytic Chemistry IV, Snowbird, UT (October 1989).
Department of Chemistry, University of Delaware (February 1990).
Mobil Research and Development Co., Paulsboro, NJ (March 1990).
Developments in Heterogeneous Catalysis, NAS-ASGDR Workshop (March 1990).
7th Catalysis and Surface Chemistry Research Conference, Department of Energy (March 1990).
Department of Chemical Engineering, California Institute of Technology (April 1990).
Symposium on Structure-Activity Relationships in Heterogeneous Catalysis, ACS Division of Petroleum Chemistry (April 1990).
Texaco, Beacon, NY (April 1990).
Department of Chemical Engineering, State University of New York at Buffalo (May 1990).
Department of Chemical Engineering, University of Pennsylvania (October 1990).
Department of Chemical Engineering, Iowa State University (October 1990).
Department of Chemical Engineering, University of Iowa (October 1990).
Department of Chemical Engineering, University of California–Santa Barbara (March 1991).
Department of Chemical Engineering, University of California-Berkeley (March 1991).
Department of Chemical Engineering, Massachusetts Institute of Technology (April 1991).
Symposium on Molecular Processes at Solid Surfaces, ACS Division of Colloid and Surface Chemistry (April 1991).
Department of Chemical Engineering, Carnegie-Mellon University (September 1991).
Department of Chemical Engineering, University of Pennsylvania (September 1991).
Wilmington Section, AIChE (October 1991).
Department of Chemical Engineering, Purdue University (October 1991).
Department of Chemical Engineering, University of Texas (November 1991).
Alpha Chi Sigma Award Symposium, Surface Science and Catalysis, AIChE Annual Meeting (November 1991).
Department of Chemical Engineering, University of Michigan (February 1992).
Gordon Conference in Catalysis (June 1992).
Symposium on Frontiers in Catalysis Research, Northwestern University (September 1992).
Department of Chemical Engineering, Cornell University (September 1992).
American Vacuum Society, National Symposium, Chicago, IL (November 1992).
Department of Chemical Engineering, Princeton University (December 1992).
Department of Chemical Engineering, University of Virginia (February 1993).
Department of Chemical Engineering, University of Massachusetts (March 1993).
New England Catalysis Club (March 1993).
Symposium on the Surface Science of Catalysis, ACS Divisions of Colloid and Surface Chemistry and of Physical Chemistry (March 1993).
Department of Chemical Engineering, University of Colorado (April 1993).
Paul H. Emmett Award Lecture, 13th North American Meeting of the Catalysis Society, Pittsburgh, PA (May 1993).
Department of Chemical Engineering, Université Laval (September 1993).
Catalysis Discussion Group, CANMET, Ottawa (September 1993).
Department of Chemical Engineering, University of Toronto (September 1993).
Department of Chemistry, University of Calgary (September 1993).

Department of Chemical Engineering, University of British Columbia (September 1993).
Department of Chemical Engineering, École Polytechnique de Montréal (October 1993).
Pittsburgh-Cleveland Catalysis Society (October 1993).
Department of Chemistry, University of Maryland (October 1993).
Department of Chemistry, Harvard University (December 1993).
Symposium on Catalytic Reaction Engineering for Environmentally Benign Processes, ACS National Meeting (March 1994).
Dow Chemical Company, Midland, MI (April 1994).
Faraday Division Symposium, Annual Congress of The Royal Society of Chemistry (April 1994).
Department of Chemical Engineering, University of Akron (May 1994).
Uniroyal Chemical, Middlebury, CT (May 1994).
Department of Chemical Engineering, Northwestern University (May 1994).
Hercules, Inc., Wilmington, DE (June 1994).
Department of Chemical Engineering, University of Washington (September 1994).
Pacific Northwest Laboratories, Richland, WA (September 1994).
Pacific Northwest Section Symposium, American Vacuum Society, Portland, OR (September 1994).
E. I. duPont de Nemours & Co., Wilmington, DE (October 1994).
Department of Chemistry, University of Tokyo (November 1994).
The 13th International Taniguchi Conference on Catalysis, Kobe, Japan (November 1994).
Gordon Conference on Chemical Reactions at Surfaces (January 1995).
Wilmington Section, AIChE (February 1995).
Department of Chemical Engineering, CCNY (March 1995).
Robert L. Pigford Lecture, Department of Chemical Engineering, University of Delaware (March (1995).
Ipatieff Prize Lecture, 209th ACS National Meeting, Anaheim, CA (April 1995).
Catalysis Club of Philadelphia Spring Symposium (May 1995).
3rd Paul Sabatier Conference in Catalysis, Strasbourg, France (July 1995).
Schuit Institute of Catalysis, Eindhoven University of Technology, Eindhoven, The Netherlands (July 1995).
Koninklijke/Shell-Laboratorium, Amsterdam, The Netherlands (July 1995).
Department of Chemistry, West Chester University (September 1995).
Department of Chemical Engineering, UCLA (January 1996).
Department of Chemistry, Columbia University (February 1996).
Catalysis Club of Philadelphia Spring Symposium (May 1996).
10th Catalysis and Surface Chemistry Research Conference, Department of Energy (May 1996).
Materials 2000 Symposium, University of Delaware (June 1996).
18th Annual Chemical Engineering Symposium, Department of Chemical Engineering, Carnegie Mellon University (October 1996).
Academy of Lifelong Learning, University of Delaware (November 1996).
Air Products and Chemicals Inc., Allentown, PA (March 1997).
Merck & Co., Rahway, NJ (May 1997).
Department of Chemistry, University of Auckland (a series of three lectures to the Physical, Inorganic, and Analytical Sections), Auckland, New Zealand (August–September 1997).

Auckland Section, New Zealand Institute of Chemistry (August 1997).
Department of Chemistry, University of Waikato, Hamilton, New Zealand (August 1997).
Department of Chemistry, University of Otago, Dunedin, New Zealand (August 1997).
Department of Chemistry, University of Canterbury, Christchurch, New Zealand (September 1997).
Trenton Section, American Chemical Society (November 1997).
Symposium on Model Reactions for Surface Processes at Low Pressure, AIChE National Meeting (November 1997).
School of Chemical Engineering, Georgia Institute of Technology (December 1997).
Collaboratus VIII, Distinguished Lecture Series, Department of Chemical Engineering, Rutgers University (February 1998).
Department of Chemical Engineering, The Pennsylvania State University (February 1998).
ARCO Chemical, Newtown Square, PA (April 1998).
Catalysis Club of Chicago (April 1998).
UOP, Chicago, IL (April 1998).
Department of Chemical Engineering, Michigan Technological University (April 1998).
4th DOE/BES Research Conference on Homogeneous Catalysis and Organometallic Chemistry (June 1998).
Gordon Conference on Catalysis (June 1998).
Roermond Conference on Catalysis, Rolduc, Kerkrade, The Netherlands (July 1998).
Departments of Inorganic Chemistry and Chemical Physics, Fritz Haber Institut, Berlin, Germany (July 1998).
Institut für Angewandte Chemie, Berlin-Adlershof, Germany (July 1998).
Department of Chemistry, University of Paris 7, Paris, France (July 1998).
Rupprecht and Patashnick Co., Albany, NY (August 1998).
Symposium on Structure and Reactivity of Complex Metal Oxide Surfaces, ACS National Meeting (August 1998).
Catalytica Advanced Technologies, Mountain View, CA (September 1998).
Department of Chemical Engineering, University of California-Berkeley (September 1998).
Eastman Chemical, Kingsport, TN (November 1998).
Engelhard Corporation, Iselin, NJ (January 1999).
Catalysis Society of Metropolitan New York (January 1999).
Departments of Chemistry and Chemical Engineering, Northwestern University (January 1999).
Rupprecht and Patashnick Co., Third TEOM 1500 PMA Users Meeting (April 1999).
DOE/BES Workshop on Opportunities for Catalysis in Carbon Management (April 1999).
SABIC America, Inc., Houston, TX (May 1999).
Shell Chemical Company, Houston, TX (May 1999).
Southwest Catalysis Club Spring Symposium (May 1999).
European Science Foundation Symposium on Catalysis from First Principles, Copenhagen, Denmark (May 1999).
Center for Atomic Scale Materials Physics, Technical University of Denmark, Lyngby, Denmark (May 1999).
Symposium on Selectivity in Catalytic Reactions, Department of Chemistry, University of Hull, United Kingdom (May 1999).
Department of Chemical Engineering, University of Illinois (September 1999).

Novartis Pharmaceuticals Corporation, East Hanover, NJ (November 1999).
International Catalysis Award Lecture, 12th International Congress on Catalysis, Granada, Spain (July 2000).
Department of Chemical Engineering, University of Florida (September 2000).
Department of Chemical Engineering and Materials Science, University of Minnesota (November 2000).
Tri-States Catalysis Club, Cincinnati, OH (November 2000).
Department of Chemical Engineering, University of Cincinnati (November 2000).
Symposium on Materials Chemistry on Oxide and Carbide Surfaces, Pacifichem 2000 Meeting (December 2000).
DOE/BES Workshop on Catalysis Futures (February 2001).
Department of Chemistry, The Johns Hopkins University (March 2001).
Dow Chemical, Bound Brook, NJ (March 2001).
Department of Chemical and Petroleum Engineering, University of Kansas (April 2001).
17th North American Catalysis Society Meeting, Toronto, Canada (June 2001).
Philadelphia Catalysis Club (September 2001).
Department of Chemical Engineering, University of Wisconsin (November 2001).
Catalysis Club of Chicago (February 2002).
BP, Naperville, IL (February 2002).
Symposium on Selective Oxidation of Alkanes, ACS National Meeting (April 2002)
Dow Chemical, South Charleston, WV (August 2002).
Warren L. McCabe Lecture, Department of Chemical Engineering, North Carolina State University (September 2002).
Mesilla Workshop on Environmental Chemistry at Interfaces (February 2003).
Department of Chemical Engineering, University of New Mexico (February 2003).
28th Annual David M. Mason Lectures, Department of Chemical Engineering, Stanford University (May 2003).
Symposium on Recent Advances in Epoxidation Catalysis, Department of Chemistry, Texas A&M University (May 2003).
Symposium on Nanotechnology and Its Potential Role in Homeland Security, Department of Chemistry, Kansas State University (June 2003).
Distinguished Catalyst Researcher Seminar Series, Pacific Northwest National Laboratory (October 2003).
Department of Chemical Engineering, Washington University (November 2003).
Chemical Reaction Engineering Laboratory, Washington University (November 2003).
Wilhelm Award Symposium, AIChE Annual Meeting, San Francisco (November 2003).
Department of Chemical Engineering, University of South Carolina (January 2004).
BASF Aktiengesellschaft, Ludwigshafen, Germany (February 2004).
Department of Chemistry and Applied Engineering Science, Aalborg University, Esbjerg, Denmark (February 2004).
United Technologies Research Center, Hartford, CT (March 2004).
Somorjai Award Symposium, ACS National Meeting (April 2004).
Murphree Award Symposium, ACS National Meeting (April 2004).
USA-Netherlands Catalysis Conference (August 2004).
Symposium on Homogenous and Heterogeneous Oxidation Catalysis, ACS National Meeting (August 2004).

Lyondell Chemical Company NTO Symposium, Newtown Square, PA (October 2004).
Wilhelm Award Symposium, AIChE Annual Meeting, Austin, TX (November 2004).
Symposium on Multi-phase Reaction Engineering, AIChE Annual Meeting, Austin, TX (November 2004).
Eastman Chemical, Kingsport, TN (December 2004).
Frontiers in Catalysis: A Molecular View of Industrial Catalysis, Hornbaek, Denmark (February 2005).
Gordon Conference on Chemical Reactions at Surfaces (February 2005).
Somorjai Award Symposium, ACS National Meeting (March 2005).
Department of Chemical and Biological Engineering, Rensselaer Polytechnic Institute (April 2005).
Francis Alison Award Lecture, University of Delaware (May 2005).
Symposium on Selective Catalytic Oxidation, 19th North American Catalysis Society Meeting, Philadelphia (May 2005).
NSF-CNRS-IFP Workshop on Future Directions in Catalysis: Nano-structured Catalysts, Lyon, France (July 2005).
Wilhelm Award Symposium, AIChE Annual Meeting, Cincinnati, OH (November 2005).
Department of Chemistry, SUNY Binghamton (November 2005).
New England Catalysis Society (November 2005).
Distinguished Research Lecture, Department of Chemical Engineering, Carnegie Mellon University (February 2006).
Department of Chemical Engineering, Ohio State University (May 2006).
Department of Chemical and Biomolecular Engineering, University of Illinois (September 2006).
Department of Chemical Engineering and Materials Science, University of Minnesota (November 2006)
American Vacuum Society (November 2006).
New Zealand Institute of Chemistry (December 2006).
School of Chemical Engineering, Purdue University (February 2007).
Department of Chemical Engineering, University of Houston (March 2007).
Donald L. Katz Lectures, Department of Chemical Engineering, University of Michigan (April 2007).
2007 Catalytic Advances Program, The Catalyst Group Resources, Houston, TX (June 2007).
Sasol Technology Ltd., Sasolburg, South Africa (July 2007).
Symposium on Mechanisms in Homogeneous and Heterogeneous Catalytic Epoxidation, ACS National Meeting (August 2007).
Department of Chemical Engineering, Lehigh University (September 2007).
Department of Chemical, Materials and Bimolecular Engineering, University of Connecticut (December 2007).
Department of Chemical Engineering, Princeton University (January 2008).
Department of Chemical Engineering, Case Western Reserve University (April 2008).
Keynote Lecture, 14th International Congress on Catalysis, Seoul, South Korea (July 2008).
Wilmington Area Planning Council, Transportation and Energy: Setting Priorities for a Sustainable Future (October 2008).
NTI Nanotechnology Conference, Philadelphia, PA (October 2008).

A Century of Surface Science and Catalysis, AIChE Centennial Meeting, Philadelphia, PA (November 2008).
D. B. Robinson Distinguished Speaker, Department of Chemical and Materials Engineering, University of Alberta (February 2009).
Somorjai Award Symposium, ACS National Meeting (March 2009).
Murphree Award Symposium, ACS National Meeting (March 2009).
PIRE-ECCI Program, Department of Chemistry and Biochemistry, University of California – Santa Barbara (April 2009).
Parravano Award Lecture, Michigan Catalysis Society, Ann Arbor, MI (May 2009).
Basore Distinguished Lecture, Department of Chemical Engineering, Auburn University (October 2009).
Schlumberger Research Center, Cambridge, MA (December 2009).
School of Chemical and Biomolecular Engineering, Georgia Institute of Technology (January 2010).
Somorjai Award Symposium, ACS National Meeting (March 2010).
Department of Chemical Engineering, Worcester Polytechnic Institute (September 2010).
Somorjai Award Symposium, ACS National Meeting (March 2011).
Barnes Award Symposium, ACS National Meeting (March 2011).
Department of Chemical Engineering, University of Texas at Austin (October 2011)
Sixth Sino-US Joint Conference of Chemical Engineering, Beijing, China (November 2011).

PUBLICATIONS

1. M. A. Barteau and R. J. Madix, "Decomposition of Methyl Formate on W(100), W(100)-(5×1)C, and W(100)-CO(β)," *Journal of Catalysis*, **62**, 329 (1980).

2. M. Bowker, M. A. Barteau, and R. J. Madix, "Oxygen Induced Adsorption and Reaction of H_2, H_2O, CO, and CO_2 on Single Crystal Ag(110)," *Surface Science*, **92**, 528 (1980).

3. M. A. Barteau, M. Bowker, and R. J. Madix, "Acid-Base Reactions on Solid Surfaces: The Reactions of HCOOH, H_2CO, and $HCOOCH_3$ with Oxygen on Ag(110)," *Surface Science*, **94**, 303 (1980).

4. M. A. Barteau and R. J. Madix, "The Adsorption of Molecular Oxygen Species on Ag(110)," *Surface Science*, **97**, 101 (1980).

5. M. A. Barteau, M. Bowker, and R. J. Madix, "The Formation and Decomposition of Acetate Intermediates on the Ag(110) Surface," *Journal of Catalysis*, **67**, 118 (1981).

6. M. A. Barteau, E. I. Ko, and R. J. Madix, "The Adsorption of CO, O_2, and H_2 on Pt(100)-(5×20)," *Surface Science*, **102**, 99 (1981).

7. M. A. Barteau, E. I. Ko, and R. J. Madix, "The Oxidation of CO on the Pt(100)-(5×20) Surface, *Surface Science*, **104**, 161 (1981).

8. M. A. Barteau and R. J. Madix, "The Surface Reactivity of Silver: Oxidation Reactions," in *The Chemical Physics of Solid Surfaces and Heterogeneous Catalysis*, Vol. 4, D. A. King and D. P. Woodruff (Eds.) Elsevier, Amsterdam (1982), p. 95.

9. M. A. Barteau and R. J. Madix, "The Oxidation of C_2 Hydrocarbons on Ag(110)," in Proceedings, 4th Intern. Conf. on Solid Surfaces, and 3rd European Conference on Surface Science, Cannes, France, September, 1980, p. 448, *Vide, Couches Minces*, **201**, 448 (1980).

10. M. A. Barteau and R. J. Madix, "Lateral Interaction Effects on the Reaction of CO_2 and Oxygen on Ag(110)," *Journal of Chemical Physics*, **74**, 4144 (1981).

11. M. A. Barteau and R. J. Madix, "Low Pressure Oxidation of Ethylene on Ag(110): Possible Experimental Complications," *Surface Science*, **103**, L171 (1981).

12. M. A. Barteau and R. J. Madix, "Acetylenic Complex Formation and Displacement via Acid-Base Reactions on Ag(110)," *Surface Science*, **115**, 355 (1982).

13. M. A. Barteau and R. J. Madix, "A Study of the Relative Bronsted Acidities of Surface Complexes on Ag(110)," *Surface Science*, **120**, 262 (1982).

14. M. A. Barteau and R. J. Madix, "Low Pressure Oxidation Mechanism and Reactivity of Propylene on Ag(110) and Relation to Gas Phase Acidity," *Journal of the American Chemical Society*, **105**, 344 (1983).

15. M. A. Barteau and R. J. Madix, "Photoelectron Spectra of Adsorbed Carbonates," *Journal of Electron Spectroscopy and Related Phenomena*, **31**, 101 (1983).

16. M. A. Barteau and R. J. Madix, "An Examination of Molecular Oxygen Species on Ag(110) by UPS," *Chemical Physics Letters*, **97**, 85 (1983).

17. M. A. Barteau, J. Q. Broughton, and D. Menzel, "Determination of Hydrogen Atom Binding Sites on Ru(001) by HREELS," *Surface Science*, **133**, 443 (1983).

18. M. A. Barteau and R. J. Madix, "A Photoelectron Spectroscopic Investigation of the Interaction between H_2O and Oxygen on Ag(110)," *Surface Science*, **140**, 108 (1984).

19. M. A. Barteau, J. Q. Broughton, and D. Menzel, "Vibrational Spectroscopy of Hydrocarbon Intermediates on Ru(001)," *Applications of Surface Science*, **19**, 92 (1984).

20. M. A. Barteau, P. Feulner, R. Stengl, J. Q. Broughton, and D. Menzel, "Formation of Methyne Intermediates by Hydrogenation of Surface Carbon on Ru(001)," *Journal of Catalysis*, **94**, 51 (1985).

21. R. Martinez and M. A. Barteau, "Synthesis and Reactivity of Thin Oxide Films on the Mg(001) Surface," *Langmuir*, **1**, 684 (1985).

22. J. M. Vohs, B. A. Carney, and M. A. Barteau, "Selectivity of Proton-Abstraction from Propyne on the Ag(110) Surface," *Journal of the American Chemical Society*, **107**, 7841 (1985).

23. R. N. Spitz, J. E. Barton, M. A. Barteau, R. H. Staley, and A. W. Sleight, "Characterization of the Surface Acid-Base Properties of Metal Oxides by Titration/Displacement Reactions," *Journal of Physical Chemistry*, **90**, 4067 (1986).

24. J. M. Vohs and M. A. Barteau, "Conversion of Methanol, Formaldehyde and Formic Acid on the Polar Faces of Zinc Oxide," *Surface Science*, **176**, 91 (1986).

25. X. D. Peng, D. S. Edwards, and M. A. Barteau, "Formation of Magnesium Nitride Layers on the Mg(0001) Surface by Ion Implantation," *Surface Science*, **185**, 227 (1987).

26. J. L. Davis and M. A. Barteau, "Decarbonylation and Decomposition Pathways of Alcohols on Pd(111)", *Surface Science*, **187**, 387 (1987).

27. J. M. Vohs and M. A. Barteau, "Structure Sensitivity and Selectivity of Proton Abstraction from Alkynes on the Polar Faces of Zinc Oxide," *Journal of Physical Chemistry*, **91**, 4766 (1987).

28. M. A. Barteau and X. D. Peng, "Formation of Well-Defined MgO Layers," *Materials Chemistry and Physics*, **18**, 425 (1988).

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Statement of Dr. Mark A. Barteau
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Subcommittee on Labor, Health and Human Services, and Education
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Mr. Chairman and Members of the Subcommittee; thank you for the opportunity to submit this statement regarding FY 2013 funding for the National Institutes of Health's Institutional Development Award or "IDeA" Program. The IDeA program is funded by NIH's National Institute of General Medical Sciences (NIGMS), and was authorized by the 1993 NIH Revitalization Act (P.L. 103-43).

My name is Dr. Mark Barteau and I am the Senior Vice Provost for Research and Strategic Initiatives at the University of Delaware. I submit this testimony on behalf of the Coalition of EPSCoR/IDeA States[1] and the University of Delaware.

I would first like to provide some basic information about the IDeA program. IDeA increases our nation's biomedical research capability by improving research in states that have historically been less successful in obtaining biomedical research funds. Twenty-three states and Puerto Rico are eligible. The program funds only merit-based, peer-reviewed research that meets NIH research objectives. While IDeA was authorized by the 1993 NIH Revitalization Act (P.L. 103-43), sizable increases in funding only began in FY 2000. The program then grew rapidly, due in large part to the thoughtful actions of this Subcommittee. This funding permitted the initiation of two new program elements: COBRE and BRIN/INBRE.

The first was the COBRE program or "Centers of Biomedical Research Excellence," which are research clusters targeting specific biomedical research problems. The second IDeA program was BRIN or "Biomedical Research Infrastructure Networks," which targeted key areas such as bioinformatics and genomics and facilitated the development of cooperative networks between research-intensive universities and primarily undergraduate colleges. The BRIN grants underwent competitive renewals in

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[1] Alabama**, Alaska, Arkansas, Delaware, Hawaii, Idaho,** Iowa, **Kansas, Kentucky, Louisiana, Maine, Mississippi, Montana, Nebraska, Nevada, New Hampshire, New Mexico, North Dakota, Oklahoma, Puerto Rico, Rhode Island, South Carolina, South Dakota,** Tennessee, Utah**, Vermont, West Virginia, and Wyoming**

States in **bold** letters are eligible for the IDeA program. All of the states listed above are also eligible for the EPSCoR program.

2004 under the new name of “IDeA Networks of Biomedical Research Excellence,” or INBRE.

The COBRE program is designed to increase the pool of well-trained investigators in the IDeA states by expanding research facilities, equipping laboratories with the latest research equipment, providing mentoring for promising candidates, and developing research faculty through support of a targeted multi-disciplinary center, led by an established, senior investigator with expertise in the research focus area of the center. The INBRE program is designed to increase the pipeline of outstanding students and enhances the quality of science faculty in the IDeA states by research-intensive networking with undergraduate institutions. The INBRE program supports research infrastructure and mentoring of young investigators, and prepares students for graduate and professional schools as well as careers in the biomedical sciences at participating institutions. As you can see, these two programs play complementary roles in developing research capability and human capital in biomedical fields in the IDeA states.

COBRE goals are to: (1) develop a thematic scientific focus in a research area and a prominent research center with the mission of NIH; (2) engage an established investigator, funded by NIH, NSF or other comparable Federal or private sector source to lead the effort; (3) develop the competitiveness of three to five research projects, each supervised by a junior investigator; (4) define a plan for mentoring, career development, graduation and addition of new junior investigators to the COBRE; and (5) establish long-term plans for developing and sustaining the center, research program, investigators, collaborations and physical infrastructure.

INBRE goals are to: (1) build and strengthen the lead and partner institutions' biomedical research expertise and infrastructure; (2) build and increase the research base and capacity by providing research support to faculty, postdoctoral fellows, and graduate students at the participating institutions; (3) provide research opportunities for undergraduate students, and serve as a “pipeline” for undergraduate students to continue in health research careers within IDeA states; (4) provide outreach to students at undergraduate institutions, community colleges and tribal colleges participating in the state's network; and (5) enhance the science and technology knowledge of the state's workforce.

Impact of the IDeA Program on Delaware

I would now like to highlight the impact of the IDeA program on Delaware. Delaware does not have its own Medical School within the state. Jefferson Medical School at Thomas Jefferson University, located in downtown Philadelphia, PA, serves in that role for our State. This reality makes it even more critical for us to create and implement innovative and sustainable models for successful collaborations to become competitive within the biomedical research arena and to enhance the health care of the citizens in our state.

Please allow me to describe a few examples of how the INBRE and COBRE programs have dramatically impacted the biomedical landscape across the State of Delaware.

Before the INBRE program (formerly BRIN) was launched in Delaware in 2001, the academic institutions across the State (UD, DSU, Delaware Technical and Community College and Wesley College) had essentially no prior history of research collaborations, and interactions between researchers at the University of Delaware with colleagues at our two major clinical institutions (A.I. DuPont and Christiana Care) were essentially non-existent.

Today, the INBRE program is in the 12th year of support, and a thriving, statewide biomedical research network is in place. Delaware INBRE has secured over $45 Million from NIH-IDeA, which has provided funds for core instrumentation centers, supported 60 faculty-led biomedical research seed projects, and trained over 800 students from across the partner institutions. State-of-the-art shared core facilities in such areas as bioimaging, genomics, proteomics and bioinformatics have been established and are staffed with highly trained scientists. New faculty research, coupled with regularly scheduled seminars and workshops, is generating increased student interest in research and providing greater training opportunities for students in faculty laboratories. Greater student training in turn translates into workforce development in the biomedical and biotechnology fields.

Delaware currently has four active COBRE programs, three at the University of Delaware and one at the Alfred I. duPont Hospital for Children. We anticipate the award of a fifth COBRE program to Delaware this spring. This new COBRE award is expected for Delaware State University, which would be the first COBRE award in the Nation led by a Historically Black College or University. Each of these five COBRE programs is focused on a different scientific theme: 1) Membrane Protein Production and Characterization; 2) Women in Science and Engineering on Osteoarthritis; and 3) Molecular Design of Advanced Biomaterials at the University of Delaware, The Center for Pediatric Research at the Alfred I. DuPont Hospital for Children, and The Center for Neurosciences Research at Delaware State University. Together, these COBRE centers have launched the research careers of close to 50 young faculty members, many of whom have since successful competed for other NIH-funded programs.

Several major institutes on the UD campus and beyond have directly benefitted from the support of the IDeA program. With significant financial support from the University, the state and the private sector, the Delaware Biotechnology Institute (DBI) was established in 1999 at the University of Delaware to serve as the lead institution for a statewide partnership among government, academia and industry. The Institute's mission is to facilitate a biotechnology network to enhance existing academic and private-sector research, catalyze unique cross-disciplinary research and education initiatives, and to foster entrepreneurship that creates high-quality jobs. The success of DBI and other multidisciplinary programs, such as the Center for Translational Cancer Research, the Delaware Cardiovascular Research Center, and the Delaware Health Sciences Alliance, would not have been possible without significant support from the Delaware INBRE program.

In a similar fashion, the COBRE program on Osteoarthritis has played a key role in the 2011 launch of the Delaware Rehabilitation Institute. The DRI provides unique research and educational opportunities involving more than 50 faculty members from ten departments, including UD's Physical Therapy Department, which is ranked #2 in the Nation.

The development of a strong biomedical research capability in Delaware has been tightly integrated with public policy and health care programs to address key health concerns in the State. In the 1990's, Delaware had the highest cancer incidence and mortality rates in the Nation. Since then, Delaware has put in place impactful, well-coordinated programs that have significantly improved the health of our population. Delaware is now ranked 3rd in cancer incidence and 11th in cancer mortality. Cancer Mortality rates and adult smoking rates are dropping twice as fast as the national average, and cancer incidence among African-Americans is declining three times faster than among Caucasians. By 2008, Delaware no longer had a disparity for colorectal screening between African-Americans and Caucasians, a result of the statewide colorectal screening program for performing colonoscopies on all Delawareans 50 years of age and older. The Delaware INBRE brought together clinicians and scientists for collaborative translational research leading to the establishment of the Center for Translational Caner Research, a key contributor to this remarkable health improvement.

Since the launch of the IDeA program, we have eight-folded the annual level of NIH funds awarded to institutions across Delaware, a dramatic rise from about $5 million in 1993 to over $42 million in 2010. The IDeA program has had a very strong catalytic effect, and still accounts for about one third of these awards.

Some 28,000 jobs in Delaware depend on pharmaceutical and biotech research, an industry that contributes $6 billion per year to the State's economy and pays millions in state and local taxes. A diverse industrial bioscience segment has been created, anchored by such global enterprises as DuPont, AstraZeneca, Gore and Siemens, and supplemented by dozens of small and midsize companies.

As a small state, Delaware has adjusted its strategy by not competing head-to-head with the larger states that surround it, but focusing on its inherent strengths – building close partnerships, understanding partner needs and developing unique programs that meet additional needs to create a long-term economic benefit.

Despite these successes, our task is far from complete. Funding disparities between the states remain and may have a detrimental impact on our national self-interest. And that is why the IDeA program is so important. It is helping to ensure that all regions of the country participate in biomedical research and education. Citizens from all states should have the opportunity to benefit from the latest innovations in health care, which are most readily available in centers of biomedical research excellence.

On behalf of the University, I express gratitude to this Subcommittee for the efforts it has made over the years to provide increased funding for IDeA, in particular this

committee's work to ensure the successful inclusion of a $50 million increase for the program in FY 2012. I hope that you will continue to invest in this program, which is so important to almost half of the states in the Union. The importance of this program, especially to junior investigators who are starting to become competitive for NIH funding, should not be underestimated. They should not receive the wrong message by cutting or even possibly eliminating funding for their research after encouraging them to pursue a career in biomedical research. As a matter of fact, the IDeA program and its partner program funded by the National Science Foundation under the EPSCoR initiative, currently provide up to 60% of the critical, research seed funding available for young investigators at the University of Delaware and across the State.

We request that this committee recommend the program to be funded in FY 2013 at least at the same level as in FY 2012, which is $276,480,000. As you know, the EPSCoR/IDeA Coalition has maintained that IDeA program should constitute at least 1% of the total NIH budget, which in FY 2013 would be $310,000,000. This level of funding would restore and continue funding for COBRE and INBRE, provide funding for the recently launched COBRE Clinical and Translational Research (CTR) program, which would allow researchers and institutions to merge with the overall national biomedical research community.

Together, the 23 States and Puerto Rico that comprise the IDeA community secured just 5% of the total NIH budget in FY 2011. With over 22% of the Nation's population living in the EPSCoR/IDeA States, this figure clearly indicates the critical need for further research development and the importance of a strong IDeA program. In FY 1999, the year before COBRE grants were initiated, the 23 IDeA states and Puerto Rico received a total of $596 million from NIH. In FY 2011 total NIH funding to the IDeA community has risen to $1.5 billion. This is evidence that the program is working and that the IDeA states are moving in the right direction. To put the value of the IDeA investment into perspective, the overall FY 2012 IDeA budget, $276.48 million, is only 42% of the $645.3 million in NIH funding that Johns Hopkins University alone, in a non-IDeA state, received in FY 2011. In FY 2011, the top seven states with NIH funding received over a $1 billion each, and California alone received over $3.5 billion.

Given this, $276.48 million (less than 1% of the NIH budget) for 23 states and Puerto Rico seems more than reasonable. Every region of the country has talent and expertise to contribute to our nation’s biomedical research efforts – and every region of the country must participate if we are to increase our nation’s biomedical research capacity substantially.

On behalf of the EPSCoR/IDeA Coalition, the University of Delaware and our partner institutions across Delaware, I thank the Subcommittee for the opportunity to submit this testimony.