BIOGRAPHICAL SKETCH

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NAME: John M. Maher

eRA COMMONS USER NAME (credential, e.g., agency login): JOHNMAHER

POSITION TITLE: Vice President for Research

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
Cornell University	A.B.	1976	Chemistry
Harvard University	M.S.	1981	Chemistry
Harvard University	Ph.D.	1986	Chemistry

A. Personal Statement

The COBRE proposal requires scientific and managerial leadership at the institutional, state and inter-institutional level to develop the collaborative and participative atmosphere necessary for effective performance. I have a broad background in scientific leadership and management of cross-functional programs that will facilitate Marshall's successful growth through the project and the successful achievement of multi-institutional project objectives. My expertise in strategic planning and management of large, complex projects will be applied at the steering team level to assure that the organizational foundation of the project components is properly designed and executed.

B. Positions and Honors

Positions and Employment

2007-present Vice President for Research at Marshall University
2003-present Founding Partner, Rampant Technology Partners, LLC
2003-2007 Executive Director, Chemical Alliance Zone, Inc.
2001-2003 Senior Technical Leader, Corporate R/D, Dow Chemical Company
1995-2001 Senior Technology Manager, Solvents and Intermediates Division Union Carbide Corporation
1994-1995 Senior Technology Manager, Acrylates and Acetyls, Solvents and Intermediates, Union Carbide Corporation
1991-1994 Group Leader/Technology Manager, Vinyl, Acetate and Acrylics, Union Carbide Corporation
1989-1991 Group Leader/Technology Manager – Photoresist and Advanced Coatings R/D, Union Carbide Corporation
1987-1989 Research Scientist, Union Carbide Corporation
1984-1987 Project Scientist, Union Carbide Corporation
1981-1984 Senior Chemist, Union Carbide Corporation

Other Experience and Professional Memberships

Member, American Chemical Society; Member, AAAS

Honors

1995 Recipient, Chairman's Award for Technology Excellence – Union Carbide's highest technical award for discovery, development and commercialization of a new class of hydroformylation catalysts.

C. Contribution to Science

Full List ScienCV:

http://www.ncbi.nlm.nih.gov/sites/myncbi/john.maher.1/bibliography/48603318/public/?sort=date&direction=ascending.

1. My early investigations focused on the structure and reactivity of highly reduced transition metal complexes bearing pi-acceptor ligands. An interesting array of unprecedented atom-transfer and ligand reduction patterns were discovered, as well as some path-breaking structural characterization of the parent metal anions.

a. Maher, J. M., & Cooper, N. J. (1980). Reduction of carbon dioxide to carbon monoxide by transition metal dianions. *Journal of the American Chemical Society, 102,* 7604.
b. Beatty, R. P., Maher, J. M., & Cooper, N.J. (1981). Alkylidene complexes from reactions of transition metal dianions with imminium salts: Synthesis and characterization of Mo(CO)5CPh2. *Journal of the American Chemical Society, 103,* 238.
c. Maher, J. M., Beatty, R. P., & Cooper, N. J. (1982). Preparation of dianions of molybdenum and tungsten. *Organometallics, 1,* 215.
d. Maher, J. M., Lee, G. R., & Cooper, N. J. (1982). Evidence for oxide transfer from coordinated carbon dioxide to coordinated carbon dioxide in an anionic carbon dioxide complex. *Journal of the American Chemical Society, 104,* 6797.
e. Maher, J. M., Fox, J. R., Cooper, N. J., & Foxman, B. F. (1984). Anionic alkyne complexes of tungsten. *Journal of the American Chemical Society, 106,* 2347.
f. Maher, J. M., Beatty, R. P., & Cooper, N. J. (1985). Preparation of dianions of molybdenum and tungsten. *Organometallics, 4,* 1354.
g. Lee, G. R., Maher, J. M., & Cooper, N. J. (1987). Reductive disproportionation of carbon dioxide by dianionic carbonylmetallates of the transition metals. *Journal of the American Chemical Society, 109,* 2956.
h. Maher, J. M., Beatty, R. P., Lee, G. R., & Cooper, N. J. (1986). Preparation of dianions of molybdenum and tungsten. In R. B. King and J. J. Eisch (Eds.), *Organometallic syntheses: Vol. 3.* Amsterdam: Elsevier.

2. At Union Carbide Corporation, I contributed as an inventor on a project to develop novel ligands for rhodium catalysis of hydroformylation. The discoveries led to several generations of new catalysts for the hydroformylation of unreactive internal olefins and means of stabilization of those catalysts in continuous operation.

a-"Transition Metal Complex Catalyzed Reactions", E. Billig, A. G. Abatjoglou, D. R. Bryant, R. E. Murray, J. M. Mather (sic), United States Patent 4,599,206 to Union Carbide Corporation.
b.-"Transition Metal Complex Catalyzed Reactions", E. Billig, A. G. Abatjoglou, D. R. Bryant, R. E. Murray, J. M. Maher, United States Patent 4,717,775 to Union Carbide Corporation.
c."Transition Metal Complex Catalyzed Reactions", E. Billig, A. G. Abatjoglou, D. R. Bryant, R. E. Murray, J. M. Maher, United States Patent 4,737,588 to Union Carbide Corporation.
d."Transition Metal Complex Catalyzed Reactions", J. M. Maher, D. R. Bryant, United States Patent 4,774,361 to Union Carbide Corporation.
e."Phosphite Ligands", E. Billig, A. G. Abatjoglou, D. R. Bryant, R. E. Murray, J. M. Maher, United States Patent 4,789,753 to Union Carbide Corporation.

f.“Process for Purifying Tertiary Organophosphites”, J. M. Maher, E. Billig and D. R. Bryant, United States Patent 4,835,299 to Union Carbide Corporation.

g.“Calixarene bisphosphite ligand for use in hydroformylation processes”. Brammer; Michael A.;Peng; Wei-Jun ; Maher; John M. ; United States Patent 7,906,688 to Dow Global Technologies.

3. Continuing research in this manifold led to the discovery of highly selective catalysts for producing n-aldehydes from terminal and internal olefins, and their mixtures. Catalyst stabilization technology was also developed that allowed the commercial operation of these catalysts.

a.“Hydroformylation Process”, J. M. Maher, J. E. Babin, E. Billig, Bryant D. R., T. W. Leung, United States Patent 5,288,918 to Union Carbide Corporation.

b.“Process for Stabilizing Phosphite Ligands in Hydroformylation Reaction Mixtures”, J. E. Babin, J. M. Maher, E. Billig, United States Patent 5,364,950 to Union Carbide Corporation.

c.“Stabilization of Phosphite Ligands in Hydroformylation Process”, A. G. Abatjoglou, D. R. Bryant, J. M. Maher, United States Patent 5,756,855to Union Carbide Corporation.

d.“Stabilization of Phosphite Ligands in Hydroformylation Process”, A. G. Abatjoglou, D. R. Bryant, J. M. Maher, United States Patent 5,929,289 to Union Carbide Corporation.

4. Extension of this work to the hydroformylation of functionalized olefins led to catalysts and separation methods to produce nylon intermediates

a.Metal-Ligand Complex Catalyzed Processes”, J. C. Nicholson, D. R. Bryant, J. R. Nelson, J. R. Briggs, D. L. Packett, J. M. Maher, United States Patent 5,874,639 to Union Carbide Corporation.

b.“Metal-Ligand Complex Catalyzed Processes”, D. R. Bryant, T. W. Leung, E. Billig, T. C. Eisenschmid, J. C. Nicholson, J. R. Briggs, J. M. Maher, United States Patent 5,874,640 to Union Carbide Corporation.

c.“Process for Producing Epsilon Caprolactone and/or Hydrates and/or Esters Thereof”, J. M. Maher, E. B. Tjaden, J. R. Briggs, A. S. Guram, United States Patent 5,883,265 to Union Carbide Corporation.

d.“Metal-Ligand Complex Catalyzed Processes”, D. R. Bryant, J. C. Nicholson, J. R. Briggs, D. L. Packett, J. M. Maher, United States Patent 5,886,235 to Union Carbide Corporation.

e.“Process for Producing Aldehyde Acid Salts”,T. C. Eisenschmid, J. R. Briggs, D. L. Packett, K. D. Olson, J. M. Maher, United States Patent 5,886,236 to Union Carbide Corporation.

f.“Metal-Ligand Complex Catalyzed Processes”, D. R. Bryant, J. C. Nicholson, E. Billig, J. R. Briggs, D. L. Packett, J. M. Maher, United States Patent 5,892,119 to Union Carbide Corporation.

g.“Metal-Ligand Complex Catalyzed Process”, D. R. Bryant, J. C. Nicholson, J. R. Briggs, D. L. Packett, J. M. Maher, United States Patent 5,917,095 to Union Carbide Corporation.

h.“Process for Producing Aldehyde Acids or Salts”, M. A. Brammer, D. L. Packett, T. C. Eisenschmid, J. M. Maher, United States Patent 5,919,978 to Union Carbide Corporation.

i.“Epsilon Caprolactam Compositions”, J. M. Maher, D. R. Bryant, J. E. Holladay, T. C. Eisenschmid, J. R. Briggs, K. D. Olson, United States Patent 5,925,754 to Union Carbide Corporation.

j."Process For Producing Epsilon Caprolactams", T. C. Eisenschmid, J. R. Briggs, D. L. Packett, K. D. Olson, J. M. Maher, United States Patent 5,962,680 to Union Carbide Corporation.

5. Some of these same catalysts turned out to be extremely good at nucleophilic carbonylations, such as the conversion of ethylene oxide to beta-hydroxypropionaldehyde. This versatile molecule could be converted to the novel polyester monomer 1,3-propanediol by simple hydrogenation.

   a."Catalysts and Processes Useful in Producing 1,3-diols and/or 3-hydroxyldehydes", J. R. Briggs, J. M. Maher and A. M. Harrison, United States Patent 5,210,318 to Union Carbide Corporation.

   b."Catalysts for Producing 1,3-diols and/or 3-hydroxyaldehydes, and Processes for Making and Using Same ", J. R. Briggs, J. M. Maher and A. M. Harrison, United States Patent 5,225,387 to Union Carbide Corporation.

   c."Catalysts and Processes Useful in Producing 1,3-diols and/or 3-hydroxyaldehydes", J. R. Briggs, J. M. Maher and A. M. Harrison, United States Patent 5,449,653 to Union Carbide Corporation.

D. Research Support

List both selected ongoing and completed research projects for the past three years (Federal or non-Federally-supported). *Begin with the projects that are most relevant to the research proposed in the application.* Briefly indicate the overall goals of the projects and responsibilities of the key person identified on the Biographical Sketch. Do not include number of person months or direct costs.

<u>Ongoing Research Support</u>

3048109797-12-630: #8UL1TR000117-02 Sundaram (PI) 06/01/11 – 02/29/16
University of Kentucky
National Institutes of Health Clinical & Transformational Science Award
Role: Consortium PI (Until 2/28/13)

20080004 Maher (PI) 01/01/09 - 10/31/16
Claude Worthington Benedum Foundation
Targeted Tech Transfer Capacity Development to Promote TBED in WV
Role: PI

OIA-1458952 Maher (PI) 8/1/15-7/31/20
National Science Foundation/WV Higher Education Policy Commission
RII Track 1: Gravitational Wave Astronomy and the Appalachian Freshwater Initiative
Role: PI

01-66-14102 Maher (PI) 9/1/11-8/30/16
U.S. Economic Development Administration
West Virginia EDA University Center
Role: PI

<u>Completed Research Support</u>

National Science Foundation Maher (PI) 07/10 - 06/15
Nanotechnology and Biotechnology for Environmental Safety and Public Security
Role: PI

B-08-SP-WV-0277 Maher (PI) 02/01/08 - 09/30/14
US Department of Housing & Urban Development
Design, Planning & Construction – Advanced Engineering & Applied Tech. Complex
Role: PI

B-08-SP-WV-0277 Maher (PI) 02/01/08 - 09/30/14
US Department of Housing & Urban Development
Design, Planning & Construction – Advanced Engineering & Applied Tech. Complex
Role: PI

20080004 Maher (PI) 01/01/09 - 12/31/14
Claude Worthington Benedum Foundation
Targeted Tech Transfer Capacity Development to Promote TBED in WV
Role: PI

DE-SC0005162 Maher (PI) 09/15/10-09/14/15
U.S. Department of Energy
Center for Diagnostic Nanosystems
Role: PI