Robert A. Flowers II

Office:
Department of Chemistry
Lehigh University
Bethlehem, PA 18015
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Professional Experience

Deputy Provost for Faculty Affairs, Lehigh University, 1/17 to present
Supports the Provost and Vice President for Academic Affairs and acts as a key representative on important faulty issues including shared governance, tenure and promotion, personnel issues, and the Lehigh ADVANCE Center promoting women in STEM disciplines.

Danser Distinguished Faculty Chair in Chemistry, 7/08 to present

Department Chair, Lehigh University, 12/03-6/15
Led rebuilding of the department. Hired 15 faculty, 5 staff, and worked with colleagues to enhance research and change the instructional approach to freshman and organic chemistry and upper level lab instruction.

Professor of Chemistry, Texas Tech University, 5/03 to 12/03
Associate Professor of Chemistry, Texas Tech University, 9/01 to 5/03

Associate Professor of Chemistry, University of Toledo, 5/00-8/01.
Assistant Professor of Chemistry, University of Toledo, 9/94-5/00.

Post-Doctoral Research Associate, June 1991 - Aug 1994
Mentor: Prof. Edward M. Arnett, Duke University, Durham, NC

Research Interests

Mechanistic analysis and synthetic development of Sm(II) and Ce(IV) reagents; Mechanistic studies of single electron transfer; Calorimetric analysis of protein-ligand interactions, ion transport and molecular recognition; Back-Scattering Interferometry, Development of novel protein renaturation reagents.

Professional Associations

American Chemical Society, Royal Society of Chemistry, Sigma Xi,
American Association for the Advancement of Science

Honors and Awards

Fellow of the Royal Society of Chemistry, 2018
Murphy Lecture, East Stroudsburg University, 2017
Hillman Award for Excellence in Graduate Advising, Lehigh University, 2017
Deans Award for Research, Scholarship, and Creative Activity, Lehigh University, 2016
Fellow of the American Association for the Advancement of Science, 2012
Eleanor and Joseph F. Libsch Research Award, Lehigh University, 2012
Chancellor's Council Distinguished Research Award, Texas Tech University, 2002
Master Teacher (2000-2001), The University of Toledo
University of Toledo Outstanding Teacher Award, 1998

Robert A. Flowers II

Education

Ph.D. Chemistry, 1991 Lehigh University, Bethlehem, PA Advisor: Prof. John W. Larsen

B.S. Chemistry, 1986 East Stroudsburg University, East Stroudsburg, PA

Publications

1 "Diffuse-Reflectance FTIR/ESR Study of the Reactivity of Native Free Radicals in Illinois No. 6 Coal" Flowers, R.A., II; Gebhard, L.A.; Larsen, J.W.; Silbernagel, B.G. *Energy & Fuels*, **1989**, 3, 762.

2 "Demineralization Effects on the EPR Properties of Argonne Premium Coals" Silbernagel, B.G.; Gebhard, L.A.; Flowers, R.A., II; Larsen, J. W. *Energy & Fuels*, **1991**, 5, 561.

3 "Diffuse-Reflectance FTIR/EPR Study of the Reactivity of Native Free Radicals in Argonne Coal" Flowers, R.A., II; Gebhard, L.A.; Larsen, J.W.; Silbernagel. B.G. *Energy & Fuels*, **1992**, 6, 455.

4 "A Thermochemical Confirmation of the Mechanism of Action of Vitamin K" Arnett, E.M.; Dowd, P.; Flowers, R.A., II; Ham, S.W.; Naganathan, S. *J. Am. Chem. Soc*. **1992**, 114, 9209.

5 "Bond Cleavage Energies for Molecules and Their Associated Radical Ions" Arnett, E.M.; Flowers, R.A., II *J. Chem. Soc. Rev.*, **1993**, 22(1), 9.

6 "Thermochemical Investigation of the Oxygenation of Vitamin K" Flowers, R.A., II; Naganathan, S.; Dowd, P.; Arnett, E.M.; Ham, S.W. *J. Am. Chem. Soc*. **1993**, 115, 9409.

7 "Energetics of Formation for Conjugate Xanthyl Carbenium Ions, Carbanions and Radicals by Hydride, Proton and Electron Transfer in Solution and Their Reactions to Give Symmetrical Bixanthyls." Arnett, E.M.; Flowers, R.A., II; Meekhof, A.E.; Miller, L. *J. Am. Chem. Soc.* **1993**, 115, 12583.

8 "Calorimetric Measurements of the Complexation of Cyclosporin A, Ascomycin, Fujimycin, and Rapamycin with Lithium Chloride and with an Immunophilin" Seebach, D.; Bossler, H.G.; Flowers, R.A., II; Arnett, E.M. *Helv. Chim. Acta.*, **1994**, 77, 291.

9 "Unusual Electronic Properties of Complexes Between Coals and the Oxidants TCNQ and TCNE" Flowers II, R.A.; Gebhard, L.; Larsen, J.W.; Sanada, Y.; Sasaki, M.; Silbernagel, B.G. *Energy & Fuels*, **1994**, 8, 1524.

10 "Stabilities of Some 2-[p-substituted Phenyl] 4,4,5,5 Tetramethyl 1,3-Dioxolanes Relative to their Conjugate Dioxolenium Ions, Radicals and Carbanions as Determined by Thermodynamics For Hydride and Electron Transfer in Solution" Arnett, E.M.; Flowers, R.A., II; Meekof, A.; Pourjavadi, A.; Walek, S. A. *J. Phys. Org. Chem.*, **1994**, 7, 663.

11 "Thermodynamics for C-H Bond-Breaking of Some Amphihydric Compounds by Transfer of Protons, Hydride Ions, H-Atoms and Electrons" Arnett, E.M.; Flowers, R.A., II; Ludwig, R.T.; Walek, S. *Pure & Appl. Chem.*, **1995**, 67, 729.

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12 Arnett, E.M.; Flowers, R.A., II in "Coordination and Electron Transfer to Carbocations - Direct Access to Heterolysis and Homolysis Energies in Solution; Stable Carbocation Chemistry; G.K. Surya Prakash; P. von R. Schleyer, Eds.; John Wiley & Sons: N.Y. **1997**, pp 265-296.

13 "Electrochemical Investigation of the Reducing Power of SmI_2 and the Effect of HMPA Cosolvent" Shabangi, M.; Flowers, R.A., II *Tetrahedron Lett.* **1997**, *38*, 1137-1140.

14 "Structural Rearrangement of Strained Coals" Larsen, J.W.; Flowers, R.A., II; Hall, P.J.; Carlson, G. *Energy & Fuels*, **1997**, *11*, 998-1002

15 "9-Aryl-Xanthenes as Prototype Amphihydric Compounds for Relating the Stabilities of Cations, Anions, and Radicals by C-H Bond Cleavage and Electron Transfer" Arnett, E.M.; Flowers, R.A.; Ludwig, R.T.; Meekhof, A.E.; Walek, S. *J. Phys. Org. Chem.*, **1997**, *10*, 499-513.

16 "The Effect of Lithium Bromide and Lithium Chloride on the Reactivity of SmI_2 in THF" Fuchs, J.R.; Mitchell, M.L.; Shabangi, M.; Flowers, R.A., II *Tetrahedron Lett.* **1997**, *38*, 8157-8158.

17 "The Effect of Cosolvent on the Reducing Power of SmI_2 in Tetrahydrofuran" Shabangi, M.; Sealy, J.M.; Fuchs, J.R.; Flowers, R.A., II *Tetrahedron Lett.* **1998** *39*, 4429-4432.

18 "Calorimetric Determination of the Solution Affinity of $YbCl_3$ for HMPA in Tetrahydrofuran" Shotwell, J.B.; Flowers, R.A., II *Tetrahedron Lett.* **1998**, *39*. 8063-8066.

19 "Observation of Two-Mode Binding to DNA by Bipyridyl-(ethylenediamine) platinum(II): Isothermal Titration Calorimetry and Infrared Absorption Studies" Szabo, A.; Flowers, R.A., II; Carter, B.J.; Lee, S.A. *Phys. Rev. E.* **1998**, *58*, 7754-7760.

20 "Structural and Thermochemical Characterization of Lipoxygenase Catechol Complexes" Pham, C.; Jankun, J.; Skrzypczak-Jankun, E.; Flowers, R.A., II; Funk, M.O., Jr. *Biochemistry* **1998**, *51*, 17952-17957.

21 "The Influence of Cosolvent and Additives on the Reactivity of Samarium Diiodide" Flowers, R.A., II; Shabangi, M.; Caracoti, A.; Sealy, J.M. *Recent Research Developments in Organic Chemistry* **1999**, *3*, 141-149.

22 "Structure and Energetics of the Samarium Diiodide-HMPA Complex in Tetrahydrofuran" Shotwell, J.B.; Sealy, J.M.; Flowers, R.A., II *J. Org. Chem*. **1999**, *64*, 5251-5255.

23 "Ethylammonium Nitrate: A Protein Crystallization Reagent" Garlitz, J.A.; Summers, C.A.; Flowers, R.A., II; Borgstahl, G.E.O. *Acta Cryst. D* **1999**, *D55*, 2037-2038.

24 "The Mechanism of Reduction of Primary Radicals by SmI_2-HMPA" Shabangi, M.; Kuhlman, M.L.; Flowers, R.A., II *Org. Lett.* **1999**, *1*, 2133 -2135

25 "Highly Organized Spherical Hosts That Bind Organic Guest in Aqueous Solution with Micromolar Affinity: Microcalorimetry Studies" Piatnitski, E.L.; Deshayes, K.; Flowers, R.A., II *Chem. Eur. J.* **2000**, *6*, 999-1006.

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26 "Electrochemical Investigation of the Solvolytic Properties of Ethylammonium Nitrate (EAN)" Shotwell, J.B.; Flowers, R.A., II *Electroanalysis* **2000**, *12*, 223-226.

27 "A Highly Stable, Six-Hydrogen Bonded Molecular Duplex" Zeng, H.; Miller, R.S.; Flowers, R.A., II; Gong, B. *J. Am. Chem. Soc.* **2000**, *122*, 2635-2644.

28 "SmI_2-Mediated Nitrile Aldol Reaction" Caracoti, A.; Flowers, R.A., II *Tetrahedron Lett*. **2000**, *41*, 3039-3041.

29 "Guest and Subunit Exchange in Self-Assembled Ionophores" Cai, M.; Sidorov, V.; Lam, Y.-F.; Flowers, R.A., II; Davis, J.T. *Org. Lett.* **2000**, *2*, 1665-1668.

30 "Inner-Sphere vs. Outer Sphere Electron Transfer in Reactions Mediated by Samarium(II)Iodide" Miller, R.S.; Sealy, J.M.; Fuchs, J.R.; Shabangi, M.; Flowers, R.A., II *J. Am. Chem. Soc.* **2000**, *122*, 7718-7722.

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32 "Aggregation State and Reducing Power of the SmI_2-DMPU Complex in Acetonitrile" Kuhlman, M.L.; Flowers, R.A., II *Tetrahedron Lett.* **2000**, *41*, 8049-8052.

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36 "A Non-Covalent Approach to Anti-Parallel β-Sheet Formation" Zeng, H.; Yang, X,; Flowers, R.A., II; Gong, B. *J. Am. Chem. Soc.* **2002**, *124*, 2903-2910.

37 "Mechanistic Study of β-Substituent Effects on the Mechanism of Ketone Reduction by SmI_2" Prasad, E.; Flowers, R.A., II *J. Am. Chem. Soc.* **2002**, *124*, 6357-6361.

38 "Reduction of Alkyl Halides and Ketones by SmI_2 and Sm(II)-HMPA Complexes. Rate and Mechanistic Studies" Prasad, E.; Flowers, R.A., II *J. Am. Chem. Soc.* **2002**, *124*, 6895-6899.

39 "Protein Micelles from Lipoxygenase 3" Brault, P.-A.; Kariapper, M.S.T.; Pham, C.V.; Flowers, R.A., II; Gunning, W.T.; Funk, M.O., Jr. *Biomacromolecules* **2002**, *3*, 649-654.

40 "Investigation of the $[Sm\{N(SiMe_3)_2\}_2]$ Reducing System in THF. Rate and Mechanistic Studies" Prasad, E.; Knettle, B.W.; Flowers, R.A., II *J. Am. Chem. Soc.* **2002,** *124*, 14663-14667.

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42 "Rapid SmI_2 Mediated Reductions of Alkyl Halides and Electrochemical Properties of SmI_2/H_2O/Amine" Dahlen, A.; Hilmersson, G.; Knettle, B.W.; Flowers, R.A., II *J. Org. Chem.* **2003**, *68*, 4870-4875.

43 "Mechanistic Investigation of Substrate Oxidation by Ce(IV) Reagents in Acetonitrile" Zhang, Y.; Flowers, R.A., II *J. Org. Chem.* **2003**, *68*, 4560-4562.

44 "Solvent Dependent Chemoselectivities in Ce(IV) Mediated Oxidative Coupling Reactions" Zhang, Y.; Raines, A.J.; Flowers, R.A., II *Org. Lett.* **2003**, *5*, 2363-2365.

45 "Reduction and Reductive Coupling of Imines by Sm(II)-Based Reagents" Kim, M.; Knettle, B.W.; Dahlen, A.; Hilmersson, G.; Flowers, R.A., II *Tetrahedron* **2003**, *59*, 10397-10402.

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47 "The Role of Ligand Displacement in Sm(II)-HMPA Based Reductions" Prasad, E.; Knettle, B.W.; Flowers, R.A., II *J. Am. Chem. Soc.* **2004**, *126*, 6891-6894.

48 "A Polymer-Supported Phosphoramide as a Lewis Base-Catalyst for the Catalytic Aldol Reaction" Flowers, R.A., II; Xu, X.; Timmons, C.; Li, G. *Eur. J. Org. Chem.* **2004**, 2988-2990.

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50 "Solvent Dependent Chemoselectivities in Additions of β-Carbonyl Imines to Allyl Trimethylsilane Using CTAN" Zhang, Y.; Raines, A.J.; Flowers, R.A., II *J. Org Chem.* **2004**, *69*, 6267-6272.

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54 "Chelation-Controlled Diastereoselective Reduction of α-Fluoroketones" Mohanta, P.K.; Davis, T.A.; Gooch, J. R.; Flowers, R.A., II *J. Am. Chem. Soc.* **2005,** *127*, 11896-11897.

55 "Cyclic Aromatic Oligoamides as Highly Selective Receptors for the Guanidinium Ion" Sanford, A.R.; Yuan, L.H.; Feng, W.; Yamato, K.; Flowers, R.A. II; Gong, B. *Chem. Comm.* **2005**, 4720-4722.

Robert A. Flowers II

56 "Mechanistic Impact of Water Addition to SmI_2: Consequences in the Ground and Transition State" Prasad, E.; Flowers, R.A., II *J. Am. Chem. Soc.* **2005**, *127*, 18093-18099.

57 "Stopped-Flow Kinetics of Tetrazine Cycloadditions: Experimental and Computational Studies Towards Sequential Transition States" Sadasivam, D.V.; Prasad, E.; Flowers, R.A., II; Birney, D.M. *J. Phys. Chem.* **2006**, *110*, 1288-1294.

58 "Samarium(II)-Based Reductants" Flowers, R.A., II; Prasad, E. Handbook on the Physics and Chemistry of Rare Earths, Eds. K.A. Gschneidner, Jr. J.-C,G, Bunzli, V.K. Pecharsky, Elsevier, 2006, Vol. 36, Chapter 230, pgs. 393-473.

59 "Mild Conversion of β-diketones to Carboxylic Acids by CAN" Zhang, Y.; Jiao, J.; Flowers, R.A., II *J. Org. Chem.* **2006**, *71*, 4516-4520.

60 "Mechanistic Evidence for Intermolecular Radical Carbonyl Additions Promoted by Samarium Diiodide" Hansen, A.M.; Lindsay, K.B.; Antharjanam, P.K.S.; Karaffa, J.; Daasbjerg, K.; Flowers, R.A., II; Skrydstrup, T. *J. Am. Chem. Soc.* **2006**, *128*, 9616-9617.

61 "A Convenient One-Pot Synthesis of Spirocyclic Pyrido[1,2-a]indole Derivatives from 3-(2-Bromoethyl)indole" Jiao, J.; Zhang, Y.; Flowers, R.A., II *Synlett*, **2006**, 3355-3357.

62 "Solvation Controlled Luminescence of Sm(II) Complexes" Teprovich, J.A., Jr.; Prasad, E.; Flowers, R.A., II *Angew. Chem.* **2007**, *46*, 1145-1148. **VIP paper**

63. "An Efficient and General Approach to β-Functionalized Ketones" Jiao, J.; Nguyen, L. X.; Patterson, D.R.; Flowers, R.A., II *Org. Lett.* **2007**, *9*, 1323-1326.

64. "Mechanistic Studies of Ce(IV)-mediated Oxidation of 1,3-Dicarbonyls: Solvent-Dependent Behavior of Radical Cation Intermediates" Jiao, J.; Zhang, Y.; Devery, J.J.; Xu, L.; Deng, J.; Flowers, R.A., II *J. Org. Chem.* **2007**, *72*, 5486-5492.

65. "Mechanistic Role of Proton Donor Coordination in Reactions of Samarium Diiodide" Teprovich, J.A., Jr.; Balili, M.N.; Pintauer, T.; Flowers, R.A., II *Angew. Chem.* **2007**, *46*, 8160-8163. **VIP paper**

66. "Mechanistic Studies on the Role of Cosolvents and Additives in Samarium(II)-Based Reductions" Flowers, R.A., II *Synlett* **2008**, 1427-1439. Invited Account of my work

67. "Mechanistic Study of Samarium Diiodide-HMPA Initiated 5-exo-trig Ketyl-Olefin Coupling: The Role of HMPA in Post Electron Transfer Steps" Sadasivam, D.V.; Antharjanam, P.K.S.; Prasad, E.; Flowers, R.A., II *J. Am. Chem Soc.* **2008**, *130*, 7228-7229. **First paper to be featured as an Image Challenge on the JACS$^{\beta}$ website.**

68. "Generation of Sm(II) Reductants Using High Intensity Ultrasound" Teprovich, J.A., Jr.; Antharjanam, P.K.S.; Prasad, E.; Pesciotta E. N.; Flowers, R.A., II *Eur. J. Inorg. Chem.* **2008**, 5015-5019. **Article featured on the journal cover.**

Robert A. Flowers II

69. "Synthesis of *γ*-substituted Ketones via the Ce(IV)-mediated Oxidative Coupling of Cyclobutanols and Inorganic Halides" Casey, B.M.; Eakin, C.A.; Flowers, R.A., II *Tetrahedron Lett.* **2009**, *50*, 1264-1266.

70. "Ce(IV)-Based Synthesis of Tetrasubstituted Pyrazoles" Devery, J.D., III; Mohanta, P.K.; Casey, B.M.; Flowers, R.A., II *Synlett* **2009**, 1490-1494.

71. "Generation of Triarylamine Radical Cations Through Reaction of Triarylamines with Cu(II) in Acetonitrile. A Kinetic Investigation" Sreenath, K.; Suneesh, C.V.; Gopidas, K.R.; Flowers, R.A., II *J. Phys. Chem. A* **2009** *113*, 6477-6483.

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73. "Studies on the Mechanism, Selectivity, and Synthetic Utility of Lactone Reduction Using SmI_2 and H_2O" Parmar, D.; Sadasivam, D.V.; Matsubara, H.; Bradley, P.A.; Flowers, R.A., II; Procter, D.J. *J. Am. Chem. Soc.* **2009**, *131*, 15467-15473.

74. Procter, D.J.; Flowers, R.A., II; Skrydstrup, T. *Organic Synthesis Using Samarium Diiodide: A Practical Guide;* Royal Society of Chemistry Publishing: UK, 2010. **Book**

75. "Efficient protein renaturation using tunable hemifluorinated anionic surfactants as additives" Singh, R.; Flowers, R.A., II *Chem. Commun.* **2010**, *46*, 276-278.

76. "Peripheral Site Acetylcholinesterase Inhibitors Targeting Both Inflammation and Cholinergic Dysfunction" Young, S.; Fabio, K.; Guillon, C.; Mohanta, P. Halton, T.A.; Heck, D.E.; Flowers, R.A., II; Laskin, J.D.; Heindel, N.D. *Bioorg. Med. Chem. Lett.* **2010**, *20*, 2987-2990.

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81. "Back-Scattering Interferometry: A Versatile Platform for the Study of Free-Solution vs. Surface Immobilized Hybridization" Pesciotta, E.; Bornhop, D.J.; Flowers, R.A., II *Chemistry, As. J.* **2011**, *6*, 70-73.

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Robert A. Flowers II

83. "Back-scattering interferometry: an alternative approach for the study of hydrogen bonding interactions in organic solvents" Pesciotta, E.N.; Bornhop, D.J.; Flowers, R.A., II *Org. Lett.* **2011**, *13*, 2654-2657.

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85. "On the Nature of the Oxidative Heterocoupling of Lithium Enolates" Casey, B.M.; Flowers, R. A., II *J. Am. Chem. Soc.* **2011**, *133*, 11492–11495. **Featured as an Image Challenge on the JACS$^{\beta}$ website**

86. "Investigation of Anticholinergic and Non-steroidal Anti-inflammatory Prodrugs which Reduce Chemically-induced Skin Inflammation" Young, S.C.; Fabio, K.M.; Huang, M.-T.; Saxena, J.; Harman, M.P.; Guillon, C.D.; Heck, D.E.; Flowers, R.A., II; Heindel, N.D.; Laskin, J.D. *J. Appl. Tox.* **2012**, *32*, 135-141.

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89. "Synthesis and Calorimetric, Spectroscopic, and Structural Characterization of Isocyanide Complexes of Trialkylaluminum and Tri-tert-butylgallium" Kingsley, N.B.; Kirschbaum; Teprovich, J.A., Jr.; Flowers, R.A., II; Mason, M.R. *Inorg. Chem.* **2012**, *51*, 2494-2502.

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91. "Catalytic atom-economical aromatic substitution via radicals" Gansäuer, A.; Fleckhaus, A.; Behlendorf, M.; von Laufenberg, D.; Sadasivam, D.V.; Flowers, R.A., II *Angew. Chem. Int. Ed.* **2012**, *51*, 4739-4742. **Designated a Hot Paper by the journal editors**

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94. **"**Preparation and Use of Samarium Diiodide (SmI_2) in Organic Synthesis: The Mechanistic Role of HMPA and Ni(II) Salts in the Samarium Barbier Reaction" Sadasivam, D.V.; Choquette, K.A.; Flowers, R.A., II *J. Vis. Exp.* **2013**, (72), e4323, doi:10.3791/4323.

Robert A. Flowers II

95. **"**Uncovering the Mechanism of the Ag(I)/Persulfate-Catalyzed Cross-Coupling Reaction of Arylboronic Acids and Heteroarenes" Patel, N.R.; Flowers, R.A. II *J. Am. Chem. Soc.* **2013**, *135*, 4672-4675.

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97. "Substrate-Directable Electron Transfer Reactions. Dramatic Rate Enhancement in the Chemoselective Reduction of Cyclic Esters using SmI_2–H_2O: Mechanism, Scope and Synthetic Utility" Szostak, M.; Spain, M.; Choquette, K.A.; Flowers, R.A., II; Procter, D.J. *J. Am. Chem. Soc.* **2013**, *135*, 15702-15705.

98. "Substituent Effects and Supramolecular Stabilization of Titanocene(III): Implications for Catalysis in Single Electron Steps" Gansäuer, A.; Kube, C.; Daasbjerg, K.; Sure, R.; Grimme, S.; Fianu, G.D.; Sadasivam, D.V.; Flowers, R.A., II *J. Am. Chem. Soc.* **2014**, *136*, 1663-1671.

99. "Sm and Yb Reagents" Choquette, K.A.; Flowers, R.A., II in *Comprehensive Organic Synthesis, 2nd Edition*; Molander, G.A., Knochel, P., Eds.; Elsevier: Oxford, **2014**; Vol. 1, pp. 279-343. **Book Chapter**

100. "Solvent-Dependent Substrate Reduction by $[Sm\{N(SiMe_3)_2\}_2(THF)_2]$. An Alternative Approach for Accelerating the Rate of Substrate Reduction by Sm(II)" Chiuck, T.V.; Hilmersson, G.; Flowers, R.A., II *J. Org. Chem.* **2014**, *79*, 9441-9443.

101. "Kinetic and Mechanistic Properties of *fac*-$Ir(ppy)_3$-catalyzed Redox Neutral Coupling of Alkyl Halides and Arenes: The Fate of the Photocatalyst" Devery, J.J. III; Douglas, J.J.; Nguyen, J.D.; Cole, K.P.; Flowers, R.A. II; Stephenson, C.R.J. *Chem. Sci.* **2015**, *6*, 537-541.

102. "Mechanistic Study of the Titanocene(III)-Catalyzed Radical Arylation of Epoxides" Gansäuer, A.; von Laufenberg, D.; Kube, C.; Dahmen, T.; Michelmann, A.; Behlendorf, M.; Sure, R.; Seddiqzai, M.; Grimme, S.; Fianu, G.D.; Sadasivam, D.V.; Flowers, R.A., II *Chem. Eur. J.* **2015**, *21*, 280-289.

103. "Expedient and Highly Diastereoselective Synthesis of 2 (2-Hydroxyethyl)bicyclo[2.1.1]hexan-1-ols via Allylsamarium Bromide-Mediated Cascade Double-cyclization" Shen., M.; Tu, Y.; Xie, G.; Niu, Q.; Mao, H.; Xie, T.; Flowers, R.A., II; Lv, X.; Wang, X. *J. Org. Chem.* **2015**, *80*, 52-61.

104. "Mechanistic Study of the Samarium Diiodide - *N*,*N*-dimethyl-2-aminoethanol Reducing System" Chciuk, T.V.; Boland, B.P.; Flowers, R.A., II *Tetrahedron Letters* **2015**, *56*, 3212-3215. (invited article for a special issue in honor of Professor Harry Wasserman).

105. "Titanocenium(III) Complexes for Catalysis in Single Electron Steps" Gansäuer, A.; Hildebrandt, S.; Michelmann, Dahmen, T.; von Laufenberg, D.; Fianu, G.D.; Flowers, R.A., II *Angew. Chem. Int. Ed.* **2015**, *54*, 7003-7006.

Robert A. Flowers II

106. “The Mechanism of Silver-Catalyzed Decarboxylative Fluorination” Patel, N.R.; Flowers, R.A., II *J. Org. Chem.* **2015**, *80*, 5834-5841.

107. “Proton Coupled Electron Transfer in Reductions of Arenes by SmI_2-Water Complexes” Chiuck, T.V.; Flowers, R.A., II *J. Am. Chem. Soc.* **2015**, *137*, 11526-11531.

108. "Tuning the Redox Properties of the Titanocene(III)/(IV)-Couple for Catalysis in Single Electron Steps" Gansauer, A.; Hildebrandt, S.; Vogelsang, E.; Flowers, R.A., II *Dalton Trans.* **2016**, *45*, 448-452. Invited Frontier article.

109. "The Role of Solvents and Additives in Reactions of Samarium Diiodide and Related Reductants" Chciuk, T.V.; Flowers, R.A., II in *Science of Synthesis*, Marek, I., Ed.; Georg Thieme Verlag KG: Stuttgart. **Book Chapter**.

110. "The Origin and Prediction of Free-Solution Interaction Studies Performed Label-Free" Bornhop, D.J.; Kammer, M.N.; Kussrow, A.; Flowers, R.A., II; Meiler, J. *Proc. Nat. Acad. Sci.* **2016**, *113*, E1595-E1604.

111. "Highly Active Titanocene Catalysts for Epoxide Hydrosilylation - Synthesis, Theory, Kinetics, EPR" Henriques, D.S.G.; Klare, S.; Zimmer, K.; Meyer, A.; Rojo-Wiechel, E.; Bauer, M.; Sure, R.; Grimme, S.; Schiemann, O.; Flowers, R.A., II; Gansauer, A. *Angew. Chem. Int. Ed.* **2016** *55*, 7671-7675.

112. "High Affinity Proton Donors Promote Proton-Coupled Electron-Transfer Samarium Diiodide" Chiuck, T.V.; Anderson, W.R.; Flowers, R.A., II *Angew. Chem., Int. Ed.* **2016**, *55*, 6033-6036.

113. “ADAM17 Inhibitors Attenuate Corneal Epithelial Detachment Induced by Mustard Exposure” DeSantis-Rodrigues, A.; Chang, Y.C.; Hahn, R.A.; Po, I.P.; Zhou, P.; Lacey, C.J.; Pillai, A.; Young, S.C.; Flowers, R.A., II; Gallo. M.A.; Laskin, J.D.; Gerecke, D.R.; Svoboda, K.K.H.; Heindel, N.D.; Gordon, M.K. *IOVS*, **2016**, *57*, 1687-1698.

114. “Proton-Coupled Electron-Transfer in the Reduction of Carbonyls by SmI_2-Water Complexes” Chiuck, T.V.; Anderson, W.R.; Flowers, R.A., II *J. Am. Chem. Soc.* **2016**, *138*, 8738-8741.

115. "Secondary Amides as Hydrogen Atom Transfer Promoters for Reactions of Samarium Diiodide" Chiuck, T.V.; Li, A. M.; Vazquez-Lopez, A.; Anderson, W.R.; Flowers, R.A., II *Org. Lett.* **2017**, *19*, 290-293.

116. "Catalytic Carbonyl Hydrosilylations *via* a Titanocene Borohydride-PMHS Reagent System" Fianu, G. D.; Schipper, K. C.; Flowers, R. A. II *Catal. Sci. Technol.* **2017**, *7*, 3469-3473. **Journal Cover Feature and Designated a Hot Paper by the journal editors.**

117. "The Reversibility of Ketone Reduction by SmI_2-Water" Chiuck, T.V.; Anderson, W.R.; Flowers, R.A., II *Organometallics* **2017**, *36*, 4579-4583.

118. "Aza vs. Oxophilicity of SmI_2: A Break of a Paradigm" Maity, S.; Flowers, R. A. II; Hoz, S. *Chem. Eur. J.* **2017**, *23*, 17070-17077.

Robert A. Flowers II

119. "Kinetic Solvent Effects in the Reduction of Alkyl Halides by {Sm[N(SiMe$_3$)$_2$]$_2$(THF)$_2$}" Chciuk, T. V.; Maity, S.; Flowers, R. A. II *J. Organomet. Chem.* **2018**, *857*, 52-57.

120. "Cp$_2$TiX Complexes for Sustainable Catalysis in Single Electron Steps" Richrath, R. B.; Olyschlager, T.; Hildebrandt, S.; Enny, D. G.; Fianu, G. D.; Flowers, R. A. II; Gansauer, A. *Chem. Eur. J.* **2018**, *24*, 6371-6379. **Journal Cover Feature and Designated a Hot Paper by the journal editors**

121. "The Interplay between Substrate and Proton Donor Coordination in Reductions of Unactivated Carbonyls by SmI$_2$-Water Through Proton-Coupled Electron-Transfer" Chiuck, T.V.; Anderson, W.R.; Flowers, R.A., II *J. Am. Chem. Soc.* **2018**, *140*, 15342-15352.

122. "On the Aqueous Solvation of SmBr$_2$ and the Mechanistic Impact of Substrate Reduction" Ramírez-Solís, A.; Bartulovich, C.O.; Chciuk, T.V.; Hernández-Cobos, J.; Saint-Martin, H.; Maron, L.; Anderson, W.R.; Li, A.M.; Flowers, R.A., II *J. Am. Chem. Soc.* **2018**, *140*, 16731-16739.

123. "Mechanistic Study and Development of Catalytic Reactions of Sm(II)" Maity, S.; Flowers, R. A., II (under review).

Invited Presentations at Professional Meetings

"Calorimetric Investigations of Biologically Relevant Reaction Mechanisms" Gordon Research Conference on Bioorganic Chemistry. June 15-20, 1997, Proctor Academy, New Hampshire.

"Inner Sphere vs. Outer Sphere Electron Transfer in Reactions of Sm(II) Reductants: Controlling the Rate and Selectivity of Free Radical Production" at Gomberg 2000: A Century of Organic Free Radical Chemistry. June 29, 2000.

"Calorimetric Studies of Molecular Recognition" North American Thermal Analysis Society Meeting, Orlando, FL October 6, 2000 **(speaker and session chair)**

"Ketone Reduction by Sm(II) Reagents. Rate and Mechanistic Studies." 16th International Conference on Physical Organic Chemistry, San Diego, CA, August 4-9, 2002.

"Thermochemical and Mechanistic Studies of Sm-Based Reductants" 5th International Conference on F Element Chemistry, Geneva, Switzerland, August 25-29, 2003.

"Thermochemical and Mechanistic Analysis of Sm(II)-based Reductants" International Symposium on the Frontiers of Chemistry in Honor of Professor Dong H. Kim, August 20, 2004.

"Mechanistic Role of Proton Donors in SmI$_2$-Mediated Reactions" Gordon Research Conference on Physical Organic Chemistry. June 28, 2005, Holderness School, New Hampshire.

"Mechanistic Role of HMPA in Samarium Diiodide-Initiated Reduction of Ketones and Aldehydes" International Symposium on Organic Free Radicals, August 6, 2008, Heron Island, Australia.

Robert A. Flowers II

"Mechanistic Study of Enamine Oxidation" 236th ACS National Meeting, August 18, 2008 **James J. Devery III**, Robert A. Flowers II

"Solvent-Dependent Oxidative Coupling of 1-Aryl−1,3-Dicarbonyls and Styrenes via Ceric Reagents" 236th ACS National Meeting, August 18, 2008 **Brian M. Casey**, Jingliang Jiao, Robert A. Flowers II

"Unexpected Mechanistic Complexity in the Reduction of Aldehydes and Ketones by SmI_2−HMPA" 236th ACS National Meeting, August 18, 2008 **Dhandapani V. Sadasivam**, Edamana Prasad, Robert A. Flowers II

"Synthesis of hybrid fluorous surfactants and their application as additives for protein renaturation" 237th ACS National Meeting, March 25, 2009 **Rajni Singh**, Robert A. Flowers, II

"Proton Donor Induced Dynamic Ligand Exchange in Reactions of Samarium Diiodide" Organic Free Radicals, Ottawa, July 28, 2009, University of Ottawa, Canada.

"Catalytic Ni(II) with SmI_2: Expanding traditional samarium chemistry" 241st ACS National Meeting, March 30, 2011 **Kimberly A Choquette**, Dhandapani V Sadasivam, Robert A Flowers II

"Follow the Thread: Unraveling the Mechanism of Single-Electron Oxidation in Important Synthetic Reactions" 5th Pacific Symposium on Radical Chemistry, September 25-28, 2011, Shirahama, Japan

"Unraveling the Mechanism of Single-Electron Oxidation and Reduction in Important Synthetic Reactions" 244th ACS National Meeting, August 19, 2012

"Unraveling the Mechanism of Single-Electron Reduction in Synthetic Reactions" Gordon Research Conference on Physical Organic Chemistry, Holderness School, Plymouth, NH June 26, 2013.

"Application of Back-Scattering Interferometry in the Study of Biomolecular Interactions and Interactions in Non-Aqueous Media" PittCon, Chicago, IL March 6, 2014.

"Unraveling the Mechanism of Single-Electron Reduction and Oxidation in Synthetic Reactions" International Conference on Physical Organic Chemistry, Ottawa, Canada, August 14, 2014.

"Mechanistic Studies of Low-Valent Samarium Reductants" Mid Atlantic Regional Meeting of the American Chemical Society, Hershey, PA, June 5, 2017.

"Mechanistic Study and Development of Catalytic Electron Transfer Reactions" Mid Atlantic Regional Meeting of the American Chemical Society, Hershey, PA, June 6, 2017.

"Follow the Thread: Unraveling the Mechanism of Substrate Reduction by Sm(II)-Water Complexes" 28th Rare Earth Research Conference, Ames, IA, June 20, 2017.

Robert A. Flowers II

"Unraveling the Mechanism of Substrate Reduction by Sm(II)-Proton Donor Complexes and the Development of Catalytic Reactions of Sm(II) Reagents" Philadelphia Inorganic Colloquium, University of Pennsylvania, April 7, 2018.

Invited Lectures

1 "Thermochemical Analysis of Biologically Relevant Reaction Mechanisms" University of Toledo, Department of Medicinal and Biological Chemistry, April 27, 1995.

2 "Thermochemical Analysis of Biologically Relevant Reaction Mechanisms" Shippensburg University, Department of Chemistry, September 22, 1995.

3 "Thermochemical Analysis of Biologically Relevant Reaction Mechanisms" Appalachian State University, Department of Chemistry, September 15, 1995.

4 "Thermochemical Analysis of Biologically Relevant Reaction Mechanisms" Ohio Wesleyan University, Department of Chemistry, February 19, 1996.

5 "Calorimetric Analysis of Biologically Relevant Reaction Mechanisms" Schering AG, Berlin, Germany. May, 1997

6 "Calorimetric Investigations of Biologically Relevant Reaction Mechanisms" Oakland University, Department of Chemistry and Biochemistry, October 15, 1997.

7 "Calorimetric Analysis of Biologically Relevant Reaction Mechanisms" Purdue, Fort Wayne, Department of Chemistry, March 4, 1998.

8 "Calorimetric Analysis of Biologically Relevant Reaction Mechanisms" University of Toledo, Department of Chemical Engineering, February 20, 1998.

9 "Calorimetric Analysis of Biologically Relevant Reaction Mechanisms" East Stroudsburg University, Department of Chemistry. February 10, 1998.

10 "Calorimetric Analysis of Biologically Relevant Reaction Mechanisms" Bowling Green State University, Department of Chemistry, February 4, 1998.

11 "Calorimetric Analysis of the Interaction of X-ray and MRI Imaging Agents with Human Serum Albumin" Schering AG, Berlin, Germany. June 8, 1998.

12 "Thermochemical and Mechanistic Investigation of Sm(II) Reagents" Georgetown University, Department of Chemistry, April 14, 1999.

13 "Physical Organic Chemistry of Divalent Lanthanides" University of Maryland, Department of Chemistry, April 15, 1999.

14 "Thermochemical and Mechanistic Investigation of Divalent Lanthanide Reagents" Johns Hopkins University, Department of Chemistry, April 16, 1999.

15 "Physical Organic Chemistry of Divalent Lanthanides" Youngstown State University, Department of Chemistry, May 7, 1999.

Robert A. Flowers II

16 "Thermochemical and Mechanistic Investigation of Divalent Lanthanide Reagents" John Carrol University, Department of Chemistry, March 22, 2000.

17 "Thermochemical and Mechanistic Investigation of Divalent Lanthanide Reagents" Indiana State University, Department of Chemistry, March 28, 2000.

18 "Intermolecular Interactions: From Organic Synthesis to Protein Folding" Boehringer Ingelheim Pharmaceuticals, Ridgefield, CT, September 7, 2000.

19 "Intermolecular Interactions: From Organic Synthesis to Protein Folding" Mineral Technologies, Inc. Bethlehem, PA, September 28, 2000.

20 "Thermochemical and Mechanistic Studies of Sm(II) Reductants" University of Missouri, St. Louis, November, 2000.

21 "Inner Sphere vs. Outer Sphere Electron Transfer in Reactions of Sm(II) Reductants: Controlling the Rate and Stereoselectivity of Sm(II)-Promoted Free Radical Reactions." Appalachian State University, Department of Chemistry, February 15, 2002.

22 "Renaturation of Proteins Using Small Molecule Chaperones. A Novel Strategy for Protein Refolding and Renaturation." Pfizer - Ann Arbor, Discovery Technologies, April 16, 2002.

23 "Inner Sphere vs. Outer Sphere Electron Transfer in Reactions of Sm(II) Reductants: Controlling the Rate and Stereoselectivity of Sm(II)-Promoted Free Radical Reactions." Pfizer - Ann Arbor, Discovery Technologies, April 16, 2002.

24 "Mechanistic Analysis of Sm-Based Reductants" Texas Christian University, Department of Chemistry, September 26, 2002.

25 "Mechanistic Analysis of Sm-Based Reductants" University of North Texas, Department of Chemistry, September 27, 2002.

26 "Mechanistic Analysis of Sm-Based Reductants" Lehigh University, Department of Chemistry, October 17, 2002.

27 "Thermochemical and Mechanistic Studies of Sm-Based Reductants" Göteborg University, Sweden, September 1, 2003.

28 "Thermochemical and Mechanistic Studies of Sm(II)-Based Reductants" University of Texas, Arlington, November 14, 2003.

29 "Fluorous Surfactants. A Novel Approach to Protein Renaturation" Pfizer - Ann Arbor, Discovery Technologies, December 2, 2003.

30 "Thermochemical and Mechanistic Studies of Sm-Based Reductants" University of Arkansas, Department of Chemistry, March 19, 2004.

Robert A. Flowers II

31 “Thermochemical and Mechanistic Studies of Sm(II)-Based Reductants” Korean Advanced Institute of Science and Technology (KAIST), Department of Chemistry, August 24, 2004.

32 “Thermochemical and Mechanistic Studies of Sm(II)-Based Reductants” Hongyang University, Seoul, South Korea Department of Chemistry, August 25, 2004.

33 “Mechanistic Studies of Sm(II)-Based Reductants” University of Kentucky, Department of Chemistry and Department of Pharmaceutical Sciences, February 25, 2005.

34 "Mechanistic Studies of Sm-Based Reductants" Department of Chemistry & Biochemistry, Duquesne University, October 14, 2005.

35 "Mechanistic Analysis of Sm(II)-Based Reductants" Department of Chemistry, University of Toledo, November 9, 2005.

36 "Mechanistic Analysis of Sm(II)-Based Reductants" Department of Chemistry, Lycoming College, March 10, 2006.

37 "Mechanistic Studies of Sm-Based Reductants" Department of Chemistry, Virginia Commonwealth University, March 23, 2006.

38 "Mechanistic Studies of Sm-Based Reductants" Department of Chemistry, Vanderbilt University, April 24, 2006.

39 " Renaturation of Proteins Using Small Molecule Chaperones. A Novel Strategy for Protein Refolding and Renaturation" Department of Chemistry, University of Toledo, July 11, 2006.

40. "Mechanistic Studies of Lanthanide-Based Reactions" Department of Chemistry, Wake Forest University, September 5, 2007.

41. "Mechanistic Studies of Lanthanide-Based Reactions" Department of Chemistry, Indian Institute of Technology, Madras, October 9, 2007.

42. "Mechanistic Studies of Lanthanide-Based Reactions" National Institute of Interdisciplinary Science and Technology, Trivandrum, India, October 10, 2007.

43. “Intermolecular Interactions: From Mechanistic Organic Chemistry to Protein Renaturation” Department of Biochemistry, University of Rochester, April 18, 2008.

44. “Mechanistic Role of Additives in Reactions of Samarium Diiodide” Department of Chemistry, Idaho State University, October 24, 2008.

45. “Wet Chemistry: The Mechanistic Role of Water (and other additives) in Lanthanide-Based Reductions and Oxidations” School of Chemistry, University of Birmingham, UK, February 17, 2010.

Robert A. Flowers II

46. "Wet Chemistry: The Mechanistic Role of Water (and other additives) in Lanthanide-Based Reductions and Oxidations" Kekulé Institute for Organic Chemistry and Biochemistry, University of Bonn, Germany, February 24, 2010.

47. "Wet Chemistry: The Mechanistic Role of Water (and other additives) in Lanthanide-Based Reductions and Oxidations" School of Chemistry, University of Manchester, UK, March 9, 2010.

48. "Give or Take an Electron. Mechanistic Studies of Single Electron Transfer in Synthetically Important Reactions" Department of Chemistry, University of California, Los Angeles, April 7, 2011.

49. "Give or Take an Electron. Mechanistic Studies of Single Electron Transfer in Synthetically Important Reactions" Department of Chemistry, University of California, Santa Barbara, April 8, 2011.

50. "Give or Take an Electron. Mechanistic Studies of Single Electron Transfer in Synthetically Important Reactions" Department of Chemistry, University of California, Santa Cruz, April 11, 2011.

51. "Give or Take an Electron. Mechanistic Studies of Single Electron Transfer in Synthetically Important Reactions" Department of Chemistry, University of California, Davis, April 13, 2011.

52. "Give or Take an Electron. Mechanistic Studies of Single Electron Transfer in Synthetically Important Reactions" Department of Chemistry, University of Pennsylvania, November 14, 2011.

53. "Give or Take an Electron. Mechanistic Studies of Single Electron Transfer in Synthetically Important Reactions" Research School of Chemistry, Australian National University, May 17, 2012.

54. "Uncovering the Mechanism of the Silver(I)/Persulfate Catalyzed Cross-Coupling of Arylboronic Acids with Heteroarenes" Research School of Chemistry, Australian National University, May 18, 2012.

55. "Give or Take an Electron. Mechanistic Studies of Single Electron Transfer in Synthetically Important Reactions" School of Chemistry, University of Tasmania, May 21, 2012.

56. "Give or Take an Electron. Mechanistic Studies of Single Electron Transfer in Synthetically Important Reactions" School of Chemistry, University of Melbourne, May 22, 2012.

57. "Give or Take an Electron. Mechanistic Studies of Single Electron Transfer in Synthetically Important Reactions" School of Chemistry, University of Sydney, May 23, 2012.

58. "Follow the Thread: Unraveling the Mechanism of Single-Electron Reduction and Oxidation in Important Synthetic Reactions" Department of Chemistry, Boston University, November 12, 2012.

Robert A. Flowers II

59. "Follow the Thread: Unraveling the Mechanism of Single-Electron Reduction and Oxidation in Important Synthetic Reactions" Department of Chemistry, Georgetown University, February 28, 2013.

60. "Follow the Thread: Unraveling the Mechanism of Single-Electron Reduction and Oxidation in Important Synthetic Reactions" Philadelphia Organic Chemists Club, March 28, 2013.

61. "Unraveling the Mechanism of Single-Electron Reduction and Oxidation in Synthetic Reactions" Department of Chemistry, Ben Gurion University, Israel, April 21, 2013.

62. "Unraveling the Mechanism of Single-Electron Reduction and Oxidation in Synthetic Reactions" Department of Chemistry, Bar-Ilan University, Israel, April 25, 2013.

63. "Unraveling the Mechanism of Single-Electron Reduction and Oxidation in Synthetic Reactions" Department of Chemistry, Technion University, Israel, April 29, 2013.

64. "Unraveling the Mechanism of Single-Electron Reduction and Oxidation in Synthetic Reactions" Department of Chemistry, Hebrew University of Jerusalem, Israel, May 1, 2013.

65. "Unraveling the Mechanism of Single-Electron Reduction in Synthetic Reactions" Department of Chemistry, Washington College, October 24, 2013.

66. "Give or Take and Electron. Mechanistic Studies of Single Electron Transfer in Synthetically Important Reactions" Department of Chemistry, University of Michigan, October 15, 2014.

67. "Give or Take and Electron. Mechanistic Studies of Single Electron Transfer in Synthetically Important Reactions" Department of Chemistry, Wayne State University, October 16, 2014.

68. "Unravelling the Mechanism of Single-Electron Transfer in Synthetic Reactions" Shanghai Institute of Organic Chemistry, April 9, 2015.

69. "Unravelling the Mechanism of Single-Electron Transfer in Synthetic Reactions" Department of chemistry, Hangzhou University, April 13, 2015.

70. "Unravelling the Mechanism of Single-Electron Transfer in Synthetic Reactions" Department of Chemistry, Beijing University, April 15, 2015.

71. "Unravelling the Mechanism of Single-Electron Transfer in Synthetic Reactions" Department of Chemistry, Tsinghua University, April 16, 2015.

72. "Unravelling the Mechanism of Single-Electron Transfer in Synthetic Reactions" Department of Chemistry, Messiah College, October 30, 2015.

73. "Unravelling the Mechanism of Single-Electron Transfer in Synthetic Reactions" Department of Chemistry, Air Force Academy, November 13, 2015.

Robert A. Flowers II

74. "Unravelling the Mechanism of Single-Electron Transfer in Synthetic Reactions" Department of Chemistry, Lebanon Valley College, March 15, 2016

75. "Unravelling the Mechanism of Single-Electron Transfer in Synthetic Reactions" Department of Chemistry, Loyola University, Chicago, April 21, 2016.

76. "Unraveling the Mechanism of Electron Transfer in Reactions of Samarium(II)-based Reductants" Department of Chemistry, University of Ottawa, May 8, 2017.

77. "Follow the Thread: The Role of Proton-Coupled Electron-Transfer in Substrate Reduction by Sm(II)-Water Complexes" Bonn International Graduate School of Chemistry, University of Bonn, Germany, September 14, 2017.

78. "Unraveling the mechanism of Single-Electron Reduction and Oxidation in Synthetic Reactions" Bonn International Graduate School of Chemistry, University of Bonn, Germany, September 14, 2017.

79. "Rare Earth Metals: Societal Importance and Applications in the Synthesis of Biologically Important Molecules" East Stroudsburg University, November 9, 2017. **Inaugural Murphy Lecture at East Stroudsburg University**

Current Students and Post-Docs

Graduate Students
Caroline Bartulovich (Ph.D. student)
Nicholas Boekell (Ph. D. student)
Nancy Obioha (Ph. D. student)

Research Scientists
Dr. Sandeepan Maity
Dr. Tesia Chciuk

Undergraduate Students
Nicole Karpowicz (B.S. student)
Eunice You (B. S. student)
Nicole Capogna (B. S. student)
Meriam Deeb (B. S. student)

Current Collaborators

Professor Darryl Bornhop, Vanderbilt University
Professor Corey Stephenson, University of Michigan
Professor Edamana Prasad, Indian Institute of Technology, Chennai, India
Dr. Professor Andreas Gansauer, University of Bonn, Bonn, Germany
Professor Goran Hilmersson, Goteborg University, Goteborg, Sweden
Professor Xiaoxia Wang, Dongguan University of Technology
Professor Alejandro Ramirez Solis, Centro de Investigación en Ciencias-IICBA. Department of Physics, Universidad Autónoma del Estado de Morelos, Mexico

Service (Since 2012)

Department Service

Chair, Department of Chemistry (1/04 - 6/15)
-Responsible for rebuilding the chemistry department. During my time as chair, I hired 15 faculty and several teaching and administrative staff.

Robert A. Flowers II

Seminar Committee (7/12-6/13)
-Organized Department seminar program

Chair, Search Committee for Director of Organic Chemistry
-Search led to the hire of Professor Suzanne Fernandez

Chair, Undergraduate Advisory Committee (7/15-12/16)
-Responsible for curriculum changes, undergraduate awards, and advising the chair and department on all matters related to our undergraduate instructional programs.

Department Strategic Advisory Committee (7/15-12/16)
-Advise the chair on issues related to undergraduate, graduate, research, and facilities issues.

University Service
CREF Review Committee (12/13)
-Made funding recommendations to the Vice President for Research

Chairs Executive Committee (7/12-6/15), **Committee Chair** (7/14-6/15)
-Planned agenda for Chair's Breakfast meetings with the Provost.

Information Systems Steering Committee (7/14-12/16)
-College representative to this LTS oversight committee.

Commission on Residential Experience (CORE) (7/14-6/15)
-I was the elected CAS representative on this committee. Assisted in preparing a final report presented to the Board of Trustees in June, 2015.

CORE Subcommittee on Fraternity and Sorority Life and Housing (7/14-6/15)
-I was the CORE representative to this subcommittee that gathered data and provided a comprehensive report to the main CORE working group.

Faculty Steering Committee (7/15-12/16)
-I was the elected CAS representative to the FSC. My major task has been to engage the faculty on issues related to faculty governance.

IT Infrastructure Committee (1/16-12/16)
-I was appointed to serve on the University IT Infrastructure committee and provide advice to the Provost on matters related to IT Infrastructure.

Professor of Practice Committee, **Committee Chair** (11/16-present)
-This committee was formed by the Provost to evaluate the Professor of Practice position and make recommendations to the Provost and Personnel Committee.

College of Health Committee (9/16-6/17)
-Part of a committee formulated to provide recommendations to the Provost and the President on a new College of Health.

College of Health Implementation Committee (9/17-present)
-member of a committee providing recommendations to the Provost

Robert A. Flowers II

Chair of the Deputy Provost for Graduate Education Search Committee (10/18-present)

College of Health Leadership Group (9/18-present)
-I am part of the administrative leadership group overseeing the working group committees planning for the new College of Health.

Chair, College of Health Faculty Committee (9/18-present)
-I chair the faculty committee tasked with interviewing Dean Candidates for the College of Health.

Faculty Adviser to the First-Generation Living Group (9/17-present)
-I am the faculty adviser to the first-generation living group and meet monthly with gryphons and colleagues in student life to plan education and social activities for first generation students.

Professional Service Committees

International member of the Swedish Research Council, Grants for Distinguished Young Scientists (6/14-6/15)
-part of international panel to evaluate proposals from young faculty in Sweden.

AAAS National Meeting panel (3/14)
-evaluate symposia proposals for the AAAS National Meeting.

AAAS (Marion Milligan Mason Award for Women in the Chemical Sciences) (2014-2016)
-I am a member of the scientific review panel that evaluates proposals.

NIH Study Panel (2/13)
-*ad hoc* committee member responsible for proposal review and presentation.

NSF Study Panel (2/14-present)
-I serve as a member of proposal review panels for the Division of Chemistry.

Organizing Committee for the 9th Pacific Symposium on Radical Chemistry
-I serve as a member of the organizing committee for the conference.

Manuscript and Proposal Reviewer
-I review approximately 50 manuscripts/yr. in the top journals in my discipline including, *Science, Nature, Journal of the American Chemical Society, Angewantde Chemie, International Edition, Journal of Organic Chemistry,* and *Chemical Science.*

-I am a regular reviewer for the National Science Foundation, the Research Corporation, the Petroleum Research Fund, The Council for International Exchange of Scholars (Fulbright) and several other funding agencies.