

Bilal El-Zahab

Name and academic rank:

Bilal El-Zahab, Assistant Professor

Degrees with fields, institutions and date:

Ph.D. Department of Chemical Engineering, University of Akron, Ohio, 2009

B.S. Department of Chemical Engineering, Middle East Technical University, Turkey, 2001

Number of years of service for this faculty, date of original appointments, and dates of advancement in rank:

2 Years

Other related experience:

Postdoctoral Associate, Massachusetts Institute of Technology, October 2010 – February 2012

Research Associate, Louisiana State University, January 2008 – October 2010

Research Assistant, University of Akron, August 2004 – July 2007

Teaching Assistant, University of Akron, August 2002 – July 2004

Consulting, patents, etc.:

1. “Frozen ionic liquid microparticles and nanoparticles, and methods for their synthesis and use” (US Patent Pending), PCT/US2008/086065, LSU (2008)
2. “Detection and molecular weight determination of organic vapors” (US Patent Pending), PCT/US2012/021806, LSU (2012)
3. “Layer-by-Layer Separator Membrane for Lithium-Ion Battery” (US Provisional Patent Application), 61/546457, MIT (2012)

State in which registered: N/A

Principal publications (Last five years):

1. MR Cole, M Li, R Jadeja, B El-Zahab, D Hayes, JA Hobden, ME Janes, IM Warner, “Minimizing human infection from Escherichia coli O157: H7 using GUMBOS”, *Journal of Antimicrobial Chemotherapy*, 2013, 68 (6), 1312-1318.
2. S Duri, B El-Zahab, CD Tran, “Polysaccharide ecocomposite materials: Synthesis, characterization and application for removal of pollutants and bacteria”, *ECS Transactions*, 2013, 50 (11), 573-594.
3. C Lu, S Das, PKS Magut, M Li, B El-Zahab, IM Warner, “Irradiation Induced Fluorescence Enhancement in PEGylated Cyanine-Based NIR Nano-and Mesoscale GUMBOS”, 2012, *Langmuir* 28 (40), 14415-14423.
4. B El-Zahab, N Baram, D Liu, WC Carter, YM Chiang, PT Hammond, “Layer-by-Layer Deposition for Improved Performance of Separators for Lithium Ion Batteries”, 2012, *Electrochemical Society*, 1022-1022.
5. SL De Rooy, S Das, M Li, B El-Zahab, A Jordan, R Lodes, A Weber, L Chandler, GA Baker, IM Warner. “Ionically Self-Assembled, Multi-Luminophore One-Dimensional Micro-and Nanoscale Aggregates of Thiocarbocyanine GUMBOS”, 2012, *Journal of Physical Chemistry C* 116 (14), 8251–8260.
6. Atiya N Jordan, Susmita Das, Noureen Siraj, Sergio L de Rooy, Min Li, Bilal El-Zahab, Lin Chandler, Gary A Baker, Isiah M Warner, “Anion-controlled morphologies and spectral features of cyanine-based nanoGUMBOS—an improved photosensitizer”, 2012, *Nanoscale* 4 (16), 5031-5038.
7. BP Regmi, J Monk, B El-Zahab, S Das, FR Hung, DJ Hayes, IM Warner, “A novel composite film for detection and molecular weight determination of organic vapors”, 2012, *Journal of Materials Chemistry* 22 (27), 13732-13741.
8. S Das, AM Powe, GA Baker, BC Valle, B El-Zahab, HO Sintim, M Lowry, SO Fakayode, ME Mccarroll, G Patonay, M Li, RM Strongin, ML Geng, IM Warner, “Molecular Fluorescence, Phosphorescence, and Chemiluminescence Spectrometry”, 2012, *Analytical chemistry* 84 (2), 597-625.
9. S Das, SL De Rooy, A Jordan, L Chandler, II Negulescu, B El-Zahab, IM Warner, “Tunable Size and Spectral Properties of Fluorescent NanoGUMBOS in Modified Sodium Deoxycholate Hydrogels”, 2012, *Langmuir*, 28 (1), 757–765.

10. M Li, GM Ganea, C Lu, SL De Rooy, B El-Zahab, VE Fernand, R Jin, S Aggarwal, IM Warner, "Lipophilic phosphonium-lanthanide compounds with magnetic, luminescent, and tumor targeting properties", 2012, *Journal of Inorganic Biochemistry*, 107 (1), 40-46.
11. S Das, MR Sylvain, VE Fernand, JN Losso, B El-Zahab, IM Warner, "Positive cooperative mechanistic binding of proteins at low concentrations: A comparison of poly (sodium N-undecanoyl sulfate) and sodium dodecyl sulfate", 2011, *Journal of Colloid and Interface Science*, 363 (2), 585-594.
12. MR Cole, M Li, B El-Zahab, ME Janes, D Hayes, IM Warner, "Design, Synthesis, and Biological Evaluation of β -Lactam Antibiotic-Based Imidazolium-and Pyridinium-Type Ionic Liquids", 2011, *Chemical Biology & Drug Design*, 78 (1), 33-41.
13. GM Ganea, PE Kolic, B El-Zahab, IM Warner, "Ratiometric Coumarin- Neutral Red (CONER) Nanoprobe for Detection of Hydroxyl Radicals", 2011, *Analytical chemistry*, 83 (7), 2576-2581.
14. X Tong, B El-Zahab, X Zhao, Y Liu, P Wang, "Enzymatic synthesis of L-lactic acid from carbon dioxide and ethanol with an inherent cofactor regeneration cycle", 2011, *Biotechnology and Bioengineering*, 108 (2), 465-469.
15. SL de Rooy, M Li, S Das, E Broering, L Chandler, IM Warner, "Fluorescent one-dimensional nanostructures from a group of uniform materials based on organic salts", 2011, *Chemical Communications*, 47, 8916-8918.
16. SL De Rooy, M Li, DK Bwambok, B El-Zahab, S Challa, IM Warner, "Ephedrinium-based protic chiral ionic liquids for enantiomeric recognition", 2011, *Chirality*, 23 (1), 54-62.
17. AM Powe, S Das, M Lowry, B El-Zahab, SO Fakayode, ML Geng, GA Baker, L Wang, ME McCarroll, G Patonay, M Li, M Aljarrah, S Neal, IM Warner, "Molecular fluorescence, phosphorescence, and chemiluminescence spectrometry", 2010, *Analytical chemistry*, 82 (12), 4865-4894.
18. L Moore, ZM LeJeune, CA Luces, AT Gates, M Li, B El-Zahab, JC Garno, IM Warner, "Lysine-Based Zwitterionic Molecular Micelle for Simultaneous Separation of Acidic and Basic Proteins Using Open Tubular Capillary Electrochromatography", 2010, *Analytical Chemistry*, 82 (10), 3997-4005.
19. JC Dumke, B El-Zahab, S Challa, S Das, L Chandler, M Tolocka, DJ Hayes, IM Warner, "Lanthanide-Based Luminescent NanoGUMBOS", 2010, *Langmuir*, 26 (19), 15599-15603.
20. S Das, D Bwambok, B El-Zahab, J Monk, SL de Rooy, S Challa, M Li, FR Hung, IM Warner, "Nontemplated Approach to Tuning the Spectral Properties of Cyanine-Based Fluorescent NanoGUMBOS", 2010, *Langmuir*, 26 (15), 12867-12876.
21. DK Bwambok, B El-Zahab, SK Challa, M Li, L Chandler, GA Baker, IM Warner, "Near-Infrared Fluorescent NanoGUMBOS for Biomedical Imaging", 2010, *ACS Nano* 3 (12), 3854-3860.
22. M Li, J Gardella, DK Bwambok, B El-Zahab, S De Rooy, M Cole, M Lowry, IM Warner, "Combinatorial Approach to Enantiomeric Discrimination: Synthesis and ^{19}F NMR Screening of a Chiral Ionic Liquid-Modified Silane Library", 2010, *Journal of Combinatorial Chemistry* 11 (6), 1105-1114.
23. A Tesfai, B El-Zahab, AT Kelley, M Li, JC Garno, GA Baker, IM Warner, "Magnetic and Nonmagnetic Nanoparticles from a Group of Uniform Materials Based on Organic Salts", 2009, *ACS nano* 3 (10), 3244-3250.
24. AT Gates, L Moore Jr, MR Sylvain, CM Jones, M Lowry, B El-Zahab, JW Robinson, IM Warner, "Mechanistic Investigation of N-Homocysteinylation-Mediated Protein- Gold Nanoconjugate Assembly", 2009, *Langmuir* 25 (16), 9346-9351.
25. M Li, SL De Rooy, DK Bwambok, B El-Zahab, JF DiTusa, IM Warner, "Magnetic chiral ionic liquids derived from amino acids", 2009, *Chemical Communications*, 6922-6924.
26. B El-Zahab, D Donnelly, P Wang, "Particle-tethered NADH for production of methanol from CO₂ catalyzed by coimmobilized enzymes", 2008, *Biotechnology and bioengineering* 99 (3), 508-514.
27. A Tesfai, B El-Zahab, DK Bwambok, GA Baker, SO Fakayode, M Lowry, IM Warner, "Controllable Formation of Ionic Liquid Micro-and Nanoparticles via a Melt-Emulsion-Quench Approach", 2008, *Nano letters* 8 (3), 897-901.

Memberships in scientific and professional societies:

Member, Electrochemical Society

Member, American Chemical Society

Honors and awards:

Kauffman Professorship Award, Florida International University, 2012

ACS Noteworthy Chemistry, American Chemical Society, 2011
Top 3 Accessed Review Article, Analytical Chemistry, American Chemical Society, 2010
ACS Noteworthy Chemistry, American Chemical Society, 2008
Best Student Poster, Industrial Advisor Committee, University of Akron, 2005

Institutional and professional services (Last five years):

Editorial Board, Journal of Green Science and Technology, 2013
Chair of the Nano session at the International Conference on Composites/Nano Engineering, August 2009
Chair of the NSF US-Korea Micro and Nano Integrated Complex Systems Workshop, October 2005