

Comprehensive Professional Vitae of  
**Bridgette Maria Budhlall**

February 2013

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**Department:** Plastics Engineering  
**College:** James B. Francis College of Engineering  
**Rank:** Assistant Professor  
**Field:** Nanostructured Polymer Colloids and Soft Matter for Nanomedicine  
**Date of Appointment:** 22<sup>nd</sup> January 2007

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**A. EDUCATION AND ACADEMIC QUALIFICATIONS**

**1. Education**

**2000 Ph.D. Polymer Science and Engineering**

LEHIGH UNIVERSITY, Bethlehem, PA. USA

Emulsion Polymers Institute and Department of Chemical Engineering

*Dissertation: Grafting Reactions in the Emulsion Polymerization of Vinyl Acetate using Poly(vinyl alcohol) as Emulsifier.*

*Thesis Advisor: Prof. Mohamed S. El-Aasser.*

**1992 B.Sc. Natural Science (Hons.)**

THE UNIVERSITY OF THE WEST INDIES

St. Augustine, Trinidad & Tobago. West-Indies.

*Major: Chemistry;*

*Minors: Analytical Chemistry, Biochemistry and Food Technology.*

**2. Academic and Professional Experience**

**2007-present Assistant Professor in Plastics Engineering**

UNIVERSITY OF MASSACHUSETTS, Lowell, MA. USA.

**2006-2007 Research Assistant Professor in Chemical and Biomolecular Engineering**

NORTH CAROLINA STATE UNIVERSITY, Raleigh. NC. USA.

*Research Collaborator: Prof. Orlin D. Velev.*

**2003-2006 Senior Research Chemist**

AIR PRODUCTS & CHEMICALS, Inc., Allentown. PA. USA.

Corporate Research Science & Technology Center (CSTC).

- 1999-2003**            **CDP (Career Development Program) Chemist**  
AIR PRODUCTS & CHEMICALS, Inc., Allentown. PA. USA.
- 1995-1999**            **Graduate Research Assistant and Teaching Assistant**  
Emulsion Polymers Institute and Department of Chemical Engineering  
LEHIGH UNIVERSITY. Bethlehem. PA. USA.
- 1992-1995**            **Research and Development Chemist**  
SRA INTERNATIONAL / HANDY EQUIPMENT Co. Ltd.  
Morvant, Trinidad and Tobago. West-Indies.
- 1991**                    **Summer Intern**  
CARIB GLASSWORKS, Co Ltd.  
Champs Fluers, Trinidad and Tobago. West-Indies.

## **B. PROFESSIONAL ACTIVITIES**

### **1. Professional Association Participation**

#### **a. Membership in Professional Societies:**

- American Chemical Society (ACS), Division Memberships (1995 – present)
  - Colloid and Surface Chemistry
  - Polymer Chemistry (POLY)
  - Polymeric Materials: Science and Engineering (PMSE)
- American Institute of Chemical Engineers (AIChE) (1999 – present)
- Society of Plastic Engineers (SPE) (1998 – present)
- American Association for the Advancement of Science (AAAS) (2001 – present)
- American Coatings Association (ASA) (2007 – present)
- Materials Research Society (MRS) (2006 – present)

#### **b. Conference Organizer:**

Session Chair / Co-Chair, “Colloidal Nanoscience and Technology” session. 80<sup>th</sup> ACS Colloid and Surface Science Symposium, University of Colorado, Boulder, CO. (June 2006)

#### **c. Reviewer / Panelist for Grant Proposals:**

- **National Science Foundation (NSF)**
  - May 2012**            *Panelist*, Division of Chemical, Bioengineering, Environ., and Transport Systems (CBET) - Particulate and Multiphase Processes Program (PMP).
  - Dec 2011**            *Reviewer*, Division of Materials Research (DMR) – Polymers Program.
  - Dec 2011**            *Panelist*, Division of Civil, Mechanical and Manufacturing Innovation (CMMI) – Polymers Program.
  - April 2010**        *Panelist*, Division of Chemical, Bioengineering, Environ., and Transport Systems (CBET) – Particulate and Multiphase Processes Program (PMP).

- Feb 2010** *Panelist*, Division of Chemical, Bioengineering, Environ., and Transport Systems (CBET) – Interdisciplinary Research Program (IDR).
- May 2008** *Panelist*, Division of Chemical, Bioengineering, Environ., and Transport Systems (CBET) – Interfacial Processes & Thermodynamics Program (IPT).
- May 2008** *Panelist*, Division of Civil, Mechanical and Manufacturing Innovation (CMMI) – Nanomanufacturing Program.
- April 2008** *Panelist*, Division of Civil, Mechanical and Manufacturing Innovation (CMMI) - Sensors and Sensing Systems Program (SSS).

- **American Chemical Society (ACS) Petroleum Research Fund (PRF)**

- Jan 2012** *Reviewer*, Doctoral New Investigator (DNI).

- **National Science Foundation of China (NSFC)**

- June 2011** *Reviewer*, Research Grant Council (RGC) of Hong Kong.

**d. Journal Editorial Board Member:**

- Responsibilities: management of the peer review of manuscripts by members of the peer community, which includes (1) handling 5-7 manuscripts per year, (2) screening the manuscripts, (3) soliciting and inviting reviewers, (4) evaluating the comments from reviewers, and (5) recommending a decision to the Editor-in-Chief (Accept, Revisions or Reject).
1. *ISRN Nanomaterials* (2012-present)
    - A peer reviewed, open access journal published by the International Scholarly Research Network (ISRN) that publishes original research articles as well as review articles in all areas of nanomaterials.
  2. *Journal of Nanoparticles*, Hindawi Publishing Corporation, (2012- present)
    - A monthly peer-reviewed journal that includes synthesis, assembly, transport, reactivity, and stability of structures and devices with novel functions obtained via precursor nanoparticles.

**e. Reviewer for Refereed Journals** (number of manuscripts and year of service are indicated):

- *Macromolecular Materials & Engineering* (1 paper reviewed in July 2012)
- *Advanced Materials* (2 papers reviewed in Oct 2010 and July 2012)
- *Polymer International* (1 paper reviewed in July 2012)
- *ACS Applied Materials and Interfaces* (2 papers reviewed in Nov 2011 and May 2012)
- *ACS Nano* (1 paper reviewed in Mar 2012)
- *Soft Matter* (1 paper reviewed in Feb 2012)
- *Langmuir* (6 papers reviewed in Aug 2007, Sept 2007, Dec 2009, April 2010, July 2010, Feb 2011)
- *Colloids and Surfaces B: Biointerfaces* (1 paper reviewed in Dec 2010)

- *Journal of the American Chemical Society* (1 paper reviewed in Aug 2010)
- *Acta Biomaterialia* (1 paper reviewed in Feb 2009)

## 2. Honors and Awards

- 2011, 2012** Mark Saab Endowed Professorship in Sustainability - *Plastics Engineering*.
- 2006** Int. Network of Emerging Science & Tech. (INEST) Fellow – *Phillip Morris USA*.
- 1998** Ticona Award – *received for outstanding achievement in research as recommended by the Materials Research Center, Lehigh University, PA - Society for Plastics Engineers*.
- 1998** Ken Earhart Award – *received for excellence in research and service - Emulsion Polymers Institute. Department of Chemical Engineering, Lehigh University. PA*.
- 1996** Henry Mason Award – *received for highest score in the Polymer Science and Engineering Ph.D. Qualifying examination, Lehigh University. PA*.
- 1995** SRA International Scholarship - *Full Tuition and Living Expenses*.

## 3. Non-teaching Activities (industrial interactions leading to sponsored research)

- 2012** *Biosurfaces*, Ashland, MA: “Electrospun Polymers for Wound Healing Applications”
- 2012** *MicroChem*, Newton, MA: “Smart Polymers for e-Skin Sensors”.
- 2011** *Raytheon*, Tewksbury, MA: “Polymer Films for Chemical Sensors”.
- 2010** *Raytheon*, Andover, MA: “Polymer Encapsulation for Liquid Energy Transfer System”.
- 2009** *Instrumentation Laboratories*, Lexington, MA: “PVC Resins for GEM4000 Sensor Card”.

## C. RESEARCH AND SCHOLARLY ACTIVITIES

### 1. Academic & Professional Publications

[**Bold numbers**] indicates publications after joining UMass Lowell; Students/Postdoctoral Students supervised by Dr. Budhlall are shown *in italics and underlined*; \* indicates that Dr. Budhlall is the corresponding author of the paper; **IF**<sup>§</sup> indicates the impact factor of the journal (as of year 2011, the latest available); Citation numbers are from the ISI Citation Report.

As of February, 6<sup>th</sup> 2013, the total citations for all of Dr. Budhlall's publications are **180 times**, and her *h-index*<sup>†</sup> is **9**.

<sup>§</sup>**IF: impact factor**, is a measure reflecting the average number of citations to articles published in science and social science journals. Normally, old publications are cited more, and it takes a few years for new publications to accumulate citations.

<sup>†</sup>*h index*, a scholar with an index of *h* has published *h* papers each of which has been cited in other papers at least *h* times. The index is designed to improve upon simpler measures such as the total number of citations or publications, and serves as a more accurate measure of the productivity and impact of the published work of a scientist or scholar.

\* In my research field, the graduate student or Postdoc who finishes the project is denoted as the first author, and the PI serves as the corresponding (more often than not last) author. For publications that I am not a corresponding author, it indicates that they are joint publications from collaborative work.

#### a. Refereed Journal Articles Published (Total of 10 since 2007):

[15] "Probing the Microstructure and Mechanical Properties of Thermoresponsive PEGylated PNIPAm Hydrogels", *T. Trongsatitkul* and **B. Budhlall\***, **2012**, (*submitted and in review*).

[14] "Enhancing the Colloidal Stability and Electronic and Optical Properties of Semiconducting and Metallic Single-Walled Carbon Nanotubes Dispersed in Water", R. Devre, **B. Budhlall\***, C. Barry, *Journal of Physical Chemistry Part B: Biophysical Chemistry*, **2013**, (*accepted*).

[13] "Microgels or Microcapsules? Role of Morphology in the Drug Release Kinetics of Thermoresponsive PNIPAm-co-PEGMA Hydrogels", *T. Trongsatitkul* and **B. Budhlall\***, *Polymer Chemistry*, **2013**, *4*, 1502-1516. (IF: 5.321; Citations: 0)

[12] "Temperature Dependence of Serum Protein Adsorption in Thermoresponsive PEGylated PNIPAm Microgels", *T. Trongsatitkul* and **B. Budhlall\***, *Colloids and Surfaces B: Biointerfaces*, **2013**, *103*, 244– 252. (IF: 3.456; Citations: 1)

[11] "Thermoresponsive Semicrystalline Poly(caprolactone) Networks: Exploiting Crosslinking in Cinnamoly Moieties to Design Polymers with Tunable Shape Memory", *A. Garle, S. Kong*, (**undergraduate student**) U. Ohja, **B. Budhlall\***, *ACS Applied Materials & Interfaces*, **2012**, *4* (2), 645-657. (IF: 4.525; Citations: 1)

- [10] “Screening for Oxidative Stress Elicited by Engineered Nanomaterials: Evaluation of Acellular DCFH Assay”, A. Pal, D. Bello, **B. Budhlall**, E. Rogers and D. K. Milton. *Dose-Response*, **2012**, *10* (3), 308-330. (IF: N/A; Citations: 1)
- [9] “Multicore/Shell PNIPAm-co-PEGMA Microcapsules for Cell Encapsulation”, *T. Trongsatitkul* and **B. Budhlall\***, *Langmuir*, **2011**, *27* (22), 13468–13480. (IF: 4.186; Citations: 9)
- [8] “Pickering Emulsion as a Template to Synthesize Janus Colloids with Anisotropy in Surface Potential”, *N. Pardhy* and **B. Budhlall\***, *Langmuir*, **2010**, *26* (16), 13130–13141. (IF: 4.186; Citations: 16)
- [7] “Effects of Particle Surface Charge, Species, Concentration, and Dispersion Methods on the Thermal Conductivity of Nanofluids”, R. Gowda, H. Sun, P. Wang, M. Charmchi, F. Gao, Z. Gu, **B. Budhlall**. *Advanced Mechanical Engineering*, **2010**. doi:10.1155/2010/807610. (IF: new journal; Citations: 6)
- [6] “Microwave, Photo-, & Thermally Responsive AuNP/PNIPAm Microgels”, **B. Budhlall\***, M. Marquez, and O. Velev. *Langmuir*, **2008**, *24*, (20), 11959-11966. (This publication was partially based on work started at NCSU) (IF: 4.186; Citations: 33)
- [5] “Monolith Catalytic Process for Producing Sorbitol”, R. Broekhuis, **B. Budhlall**, A. Nordquist. *Industrial & Engineering Chemical Research*, **2004**, *43* (17), 5146-5155. (IF: 2.237; Citations: 22)
- [4] “Characterization of Partially Hydrolyzed Poly(vinyl alcohol). Effect of Poly(vinyl alcohol) Molecular Architecture on Aqueous Phase Conformation”. **B. Budhlall**, K. Landfester, E. D. Sudol, V. L. Dimonie and M. S. El-Aasser. *Macromolecules*, **2003**, *36* (25), 9477-9484. (IF: 5.167; Citations: 18)
- [3] “Atomic Force Microscopy Studies of the Film Surface Characteristics of Poly(vinyl acetate) Latex Prepared with Poly(vinyl alcohol)”. **B. Budhlall**, O. Shaffer, E.D. Sudol, V. Dimonie and M. S. El-Aasser. *Langmuir*, **2003**, *19* (23), 9968-9972. (IF: 4.186; Citations: 10)
- [2] “Role of Grafting in the Emulsion Polymerization of Vinyl Acetate I: Effect of Degree of Poly(vinyl alcohol) Blockiness on the Kinetics and Mechanism of Grafting”. **B. Budhlall**, E. D. Sudol, V. Dimonie and M. S. El-Aasser. *Journal of Polymer Science; Part A-1: Polymer Chemistry*, **2001**, *39*, 3633-3654. (IF: 3.894; Citations: 21)
- [1] “Characterization of Partially Hydrolyzed Poly(vinyl alcohol) I : Sequence distribution of Poly(vinyl alcohol) via <sup>13</sup>C and <sup>1</sup>H-NMR and a reversed-phased gradient elution HPLC technique”. **B. Budhlall**, K. Landfester, D. Nagy, E.D. Sudol, V. Dimonie and M. S. El-Aasser. *Macromolecular Symposia*, **2000**, *155*, 63-64. (IF: N/A; Citations: 11)

## b. Referred Journal Articles in Preparation:

- [6] “Biodegradable Poly(saccharide)-based Surfactants as Alternatives to Alkyl Phenol Ethoxylates” Z. Aris, R. Bouldin, R. Nagarajan, **B. Budhlall**, to be submitted to *Green Chemistry*, **2012**. (IF: 6.32)
- [5] “Role of Nanoparticles in Enhancing the Photothermal Conductivity of PNIPAm Hydrogels”, *T. Trongsatitkul, P. Jones, (undergraduate student) H. Sun, B. Budhlall\**, to be submitted to *ACS Nano*, **2012**. (IF: 11.421)
- [4] “Enhanced Stability and Doxorubicin Drug Release Kinetics of Polymer-Liposome Capsules” *T. Trongsatitkul, M. Ruano-Aldea, K. Der, (undergraduate student) B. Budhlall\**, to be submitted to *Advanced Healthcare Materials*, **2012**. (IF: new journal)
- [3] “Encapsulation of Quantum Dots in Pickering Emulsions: Towards Novel Bioimaging Nanoprobes” *S. Muralidhara, K. Malu, P. Gaines, B. Budhlall\**, to be submitted to *Biomaterials*, **2012**. (IF: 7.404)
- [2] "A Kinetic and Mechanistic Study of the Effect of Poly(Vinyl Alcohol) Molecular Weight on Vinyl Acetate Emulsion Polymerization", *B. Budhlall\*, E. D. Sudol, V. L. Dimonie, A. Klein, and M. S. El-Aasser, Macromolecules*, 2012 (in review). (This publication was partially based on Dr. Budhlall’s Ph.D. work) (IF: 5.167; Citations: 0)
- [1] Invited Trend Article for *Macromolecular Chemistry & Physics*, published by Wiley-VCH Boschstrasse 12, 69469 Weinheim, Germany. Requested title and submission date: “Current Trends in the Synthesis of Janus Colloids”, **October 2012**. (IF: 2.361)

## c. Issued Patents and Patent Applications:

- [7] Z. Aris, R. Bouldin, R. Nagarajan, **B. Budhlall**; "Hydrophilic modification of water insoluble polysaccharide as surface-active agents", *US Patent Application*, **2012**, US61612909.
- [6] **B.M. Budhlall**, A. L. Garle; “Biodegradable Shape Memory Polymers”, *PCT World Patent Application*, **2012**, WO 2012/027573 A2.
- [5] P. Zhang, **B.M. Budhlall**, G.E. Parris, L. Cox; "Immersion Lithography Fluids", *US Patent*, **2011**, US 8,007,986 B2.
- [4] P. Zhang, **B.M. Budhlall**, G.E. Parris, L. Cox; “Immersion Lithography Fluids”, *US Patent*, **2011**, US 7,879,531 B2.
- [3] P. Zhang, **B.M. Budhlall**, G.E. Parris, L. Cox; “Immersion Lithography Fluids”, *US Patent Application*, **2007**, US20070229795A1.
- [2] P. Zhang, **B.M. Budhlall**, G.E. Parris, L. Cox; "Immersion Lithography Fluids", *European Patent Application*, **2005**, EP 1557721A2.

- [1] P. Zhang, **B.M. Budhlall**, G.E. Parris, L. Cox; "Immersion Lithography Fluids", *US Patent Application*, **2005**, US20050173682A1.

**d. Books / Book Chapters:**

- "Synthetic Resins and Plastics", R. D. Deanin, J. L. Mead, M. Wei and **B. M. Budhlall**, pp. 623-687. In *Kent and Riegel's Handbook of Industrial Chemistry and Biotechnology*, (12<sup>th</sup> ed.), J.A. Kent, Ed., Springer, Germany, **2013**.

**e. Conference Proceedings and Symposium Papers (Total of 23 since 2007):**

- 2012** "Synthesis of  $\epsilon$ -Caprolactone-based Shape Memory Polymers with Antimicrobial Properties", A. Garle and **B. Budhlall\***, *Polymer Preprints (ACS)*, **2012**, 53 (2) 437.
- 2012** "Role of Polymer Architecture on the Kinetics and Mechanisms of Swelling and Drug Release from PNIPAm-co-PEG Hydrogels", T. Trongsatitkul and **B. Budhlall\***, *Polymer Preprints (ACS)*, **2012**, 53 (2) 435.
- 2012** "A New Interdisciplinary Engineering Course at University of Massachusetts Lowell - Nanoscale Transport Phenomena for Manufacturing Nanodevices" Z. Gu, **B. Budhlall**, H. Sun, C. Barry, A. Donatelli, J. Lohmeier. *Abstracts of Papers, American Institute of Chemical Engineers (AIChE) Annual Meeting*, Pittsburgh, PA. **October, 2012**.
- 2012** "Photostable Bioimaging Probes via Pickering Emulsions". S. Muralidhara, M. Vegliante, K. Malu, P. Gaines, **B. Budhlall\***. *Abstracts of Papers, ACS 87<sup>th</sup> Colloid and Surface Science Symposium*, Baltimore, MD. **June 2012**.
- 2012** "Doxorubicin Release Kinetics of Polymer-Liposome Nanocapsules". T. Trongsatitkul, M. Ruano-Aldea, K. Der, **B. Budhlall\***. *Abstracts of Papers, ACS 87<sup>th</sup> Colloid and Surface Science Symposium*, Baltimore, MD. **June 2012**.
- 2012** "The Role of Nanofluids on the Thermal Conductivity of PNIPAm Microgels". T. Trongsatitkul and **B. Budhlall\***. *Abstracts of Papers, ACS 87<sup>th</sup> Colloid and Surface Science Symposium*, Baltimore, MD. **June 2012**.
- 2012** "Microwave-assisted synthesis and characterization of surfactants from renewable resources" Z. F. M. Aris, R. Bouldin, **B. Budhlall**, R. Nagarajan. *Abstracts of Papers, 16<sup>th</sup> Annual Green Chemistry and Engineering Conference*, Washington, DC. **June, 2012**.
- 2012** "A New Interdisciplinary Engineering Course at University of Massachusetts Lowell - Nanoscale Transport Phenomena for Manufacturing Nanodevices" Z. Gu, **B. Budhlall**, H. Sun, C. Barry, A. Donatelli, J. Lohmeier. *Abstracts of Papers, American Society of Engineering Education (ASEE), Northeast Conference*, Lowell. MA. **April, 2012**.
- 2011** "Novel Bioimaging Probes Synthesized by Encapsulation of Quantum Dots in Pickering Emulsions", N. Pardhy, S. Muralidhara, K. Malu, P. Gaines, **B. Budhlall\***. *Abstracts of Papers, ACS 86<sup>th</sup> Colloid and Surface Science Symposium*, Montreal. Canada. **June, 2011**.
- 2011** "Drug Delivery from Poly(N-isopropylacrylamide)-co-poly(ethylene glycol) Microspheres: Effect of Particle Morphology on Release Kinetics", T. Trongsatitkul and **B. Budhlall\***.

*Abstracts of Papers, ACS 86<sup>th</sup> Colloid and Surface Science Symposium*, Montreal. Canada. **June, 2011.**

- 2011** “Enzymatic Synthesis of Polysaccharide-based Biosurfactants”, Z. F. M. Aris, R. Bouldin, **B. Budhlall**, R. Nagarajan. *Abstracts of Papers, 15<sup>th</sup> Annual Green Chemistry and Engineering Conference*, Washington, DC. **June, 2011.**
- 2011** “Surface Active Polymers Derived from Naturally Occurring Polysaccharides”, Z. F. M Aris, R. Bouldin, **B. Budhlall**, R. Nagarajan. *Abstracts of papers, ACS 241<sup>st</sup> National Meeting*, Anaheim, CA. **March, 2011.**
- 2010** “Design and Synthesis of a Novel Biodegradable Polymers for Biomedical Applications”, A. Garle, S. Kong, **B. Budhlall\***, *Polymer Preprints* (American Chemical Society, Division of Polymer Chemistry), **2010**, 51 (2) 255.
- 2010** “Protein Adsorption Resistance of Thermoresponsive PEG-co-PNIPAm Microgels”, T. Trongsatitkul and **B. M. Budhlall\***. *Abstracts of Papers, ACS 240<sup>th</sup> National Meeting*, Boston, MA. **August, 2010.**
- 2010** “Screening for Oxidative Damage of Engineered Nanomaterials: Why the DCFH is of Limited Utility”, A. K. Pal, D. Bello, **B. Budhlall**, D. K. Milton. *Abstracts of Papers, Nanotoxicology 2010*, Edinburgh Napier University, Craiglockhart Campus, Edinburgh. Scotland. **June, 2010.**
- 2009** “Combination of ROP and RAFT for Synthesis of a Novel Biodegradable, Stimuli Responsive P(CL-*ran*-CCL)-*b*-PNIPAm-*b*-P(CL-*ran*-CCL) Triblock Copolymer”, A. Garle, U. Ojha, **B. Budhlall\***, *Polymer Materials Science & Engineering Preprints* (American Chemical Society), **2009**, 101, 1222.
- 2009** “Surfactant Free, Solid Stabilized Emulsion as a Template to Synthesize Janus Colloidosomes”. N. Pardhy and **B. Budhlall\***. *Abstracts of Papers, ACS 83<sup>rd</sup> Colloid and Surface Science Symposium*, New York, NY. **June, 2009.**
- 2008** “Synthesis of Thermo-responsive Copolymers composed of Poly(ethylene glycol) and Poly(N-isopropyl acrylamide) for Cell Encapsulation” T. Trongsatitkul and **B. Budhlall\***, *Materials Research Society (MRS) Symposium Proceedings*, **2008**, 1134 (Polymer-Based Smart Materials-Processes, Properties and Application), Paper #: 1134-BB08-46.
- 2008** “Microencapsulation via Liquid-Liquid Phase Separation” **B. M. Budhlall\***, S. T. Chang, M. Marquez, O. D. Velev. *Polymer Materials Science and Engineering Preprints* (American Chemical Society), **2008**, 99, 835.
- 2008** “Surfactant Free, Solid Stabilized Emulsion as a Template to Synthesize Janus Colloidosomes” N. Pardhy and **B. Budhlall\***, *Polymer Materials Science and Engineering Preprints* (American Chemical Society), **2008**, 99, 322.
- 2008** “Microwave, Photo- & Thermally Responsive PNIPAm - Gold Nanoparticle Microgels”, **B. M. Budhlall\***, M. Marquez, O. D. Velev. *Abstracts of Papers, ACS 82<sup>nd</sup> Colloid and Surface Science Symposium*, Raleigh, NC. **June, 2008.**

- 2007** “Light Response of poly-N-isopropylacrylamide Hydrogels Containing Gold Nanoparticles” E. Hon, O. D. Velev, **B. M. Budhlall**. *Abstracts of Papers, 16<sup>th</sup> Annual NC State University, Undergraduate Research Symposium, (RISE)*. Raleigh, NC. **June, 2007**.
- 2006** “Responsive Polymer Microcapsules Prepared by Liquid-Liquid Phase Separation”. **B. M. Budhlall\***, S. T. Chang, M. Marquez, O. D. Velev. *Abstracts of Papers, ACS 80<sup>th</sup> Colloid and Surface Science Symposium*, Boulder, CO. **June, 2006**,
- 2006** “Cell Encapsulation in a Thermoresponsive Polymer Microcapsule”. J. Petite O. D. Velev, **B. M. Budhlall**. *Abstracts of Papers, 15<sup>th</sup> Annual NC State University, Undergraduate Research Symposium, (RISE)*. Raleigh, NC. **June, 2006**.
- 2005** “High Refractive Index Immersion Fluids for 193nm Immersion Lithography”, **B. Budhlall\***, G. Parris, P. Zhang, X. Gao, Z. Zarkov, B. Ross, S. Kaplan, J. Burnett. *Proceedings for the International Society for Optics and Photonics (SPIE): Microlithography*, **2005**, 5754-58.
- 2004** "Wetting, Nanobubbles, and Interfacial Dynamics near the Liquid-Solid Interface". X He, S Mehta, G. Parris, **B. M. Budhlall\***. *13<sup>th</sup> International Conference on the Discrete Simulation of Fluid Dynamics (DSFD 2004)*, Cambridge, MA. **August 2004**.
- 2004** "Thermodynamic and Kinetic Study of Nanobubbles at the Liquid-Solid Interface: A modeling and AFM Study". **B. M. Budhlall\***, I. Hyder, S. Metha and G. Parris. *International SEMATECH 157nm & Immersion Lithography Symposium*, Vancouver, Canada, **August 2004**.
- 2004** “New Immersion Fluid for 193nm Immersion Lithography”. **B. M. Budhlall\***, and G. Parris. *International SEMATECH 157nm & Immersion Lithography Symposium*, Vancouver, Canada, **August, 2004**.
- 2003** “High-throughput monolithic catalyst testing: A fully automated approach to process optimization and catalyst life testing.” **B. M. Budhlall\*** and R. Broekhuis. *Catalyst Society of Metropolitan New York Spring Symposium*, NY, **March, 2003**,
- 2001** “Fundamental Study of Surfactants in Emulsion Polymerization: Effect of Surfactant type on Particle Size.” **B. M. Budhlall\***. *Gordon Research Conference, Polymer Colloids*, Tilton, NH. **July, 2001**.
- 2001** *Air Products & Chemicals*, Annual R&D Conf. Topic Company Confidential. **B. M. Budhlall\***.
- 2000** “Role of Grafting in the Emulsion Polymerization of Vinyl Acetate I: Effect of Degree of Poly(vinyl alcohol) Blockiness on the Kinetics and Mechanism of Grafting”. **B. M. Budhlall**, E. D. Sudol, V. Dimonie, M. El-Aasser. *ACS 74<sup>th</sup> Colloid and Surface Science Symposium*, Bethlehem, PA. **June, 2000**.
- 1999** “Characterization of Partially Hydrolyzed Poly(vinyl alcohol)”, **B. Budhlall**, K. Landfester, D. Nagy, E.D. Sudol, V. Dimonie, M. S. El-Aasser. *Polymer Materials Science and Engineering* (American Chemical Society), **1999**, 80, 550-551.

- 1999** “Grafting Reactions in the Emulsion Polymerization of Vinyl Acetate using Poly(Vinyl Alcohol) as Emulsifier”. **B. M. Budhlall**. *Annual Review Meeting Emulsion Polymers Institute Liaison Program*, Lehigh University; **March ‘96, ‘97, ‘98 & 1999**.
- 1998** “Characterization of Poly(vinyl alcohol) via  $^{13}\text{C}$  and  $^1\text{H}$ -NMR.” **B. M. Budhlall**. *Ticona Award Meeting of the Society of Plastic Engineers (SPE)*, Bethlehem, PA. **Oct 1998**.
- 1998** “Characterization of Poly(vinyl alcohol)” **B. Budhlall**. *ACS 3<sup>rd</sup> National Graduate Polymer Conference, University of Akron*, Akron OH; **June 1998**.

**f. Invited Speaker** (student talks excluded):

- 2012** Invited Presentation on “Smart Polymers for e-Skin Sensors” *MicroChem Co.* Newton, MA.
- 2012** Invited Presentation on “Smart Polymers for Wound Dressings” *Biosurfaces, Inc.*, Ashland, MA.
- 2012** Invited Presentation on “Antimicrobial Shape Memory Polymers for Wound Dressings” *US Army Natick Soldier Research, Development & Engineering Center*, Natick, MA.
- 2011** Invited Presentation on “Novel Semicrystalline ABA Triblock Shape Memory Polymers for Biomedical Implants” *Eastman Medical Innovation Seminar*, Lowell, MA.
- 2011** Invited Presentation on “Thermoresponsive Polymers for Drug Delivery” 2<sup>nd</sup> Annual World Congress of Nanomedicine, Shenzhen, China.
- 2010** Invited Presentation on “Polymer Encapsulation for Liquid Energy Transfer System” Raytheon, Andover, MA.
- 2009** Invited Presentation on “Synthesis of Janus Colloids via Pickering Emulsion Templates” *International Polymer Colloids Group Conference. II Ciocco*, Italy.
- 2009** Invited Presentation on “Current Research in Coatings: Use of Nanotechnology to Enhance the Performance of Coatings” *New England Society for Coatings Technology, (NESCT) Technical Symposium*, Sturbridge, MA.
- 2009** Invited Presentation on “New Developments in Coatings: Smart Polymers & Stimuli Responsive Coatings” *Rhode Island College Colloquium, Department of Physical Sciences, Rhode Island College*, Providence, RI.
- 2008** Invited Presentation on “Microwave, Photo- & Thermally Responsive PNIPAm - Gold Nanoparticle Microgels” *Nanostructured Polymers Research Center, Department of Materials Science, University of New Hampshire*, Durham, NH.
- 2008** Invited Presentation on “Liquid Crystalline Polymer Nanocomposites for Printed Circuits” *S<sup>2</sup> Technologies*, North Billerica, MA.
- 2008** Invited and Presented a two-day workshop on “*Printing Inks*” at Hewlett Packard. San Diego, CA.
- 2007** Invited Presentation on “Polymer Encapsulation of Photoluminescent Dyes” *Performance Indicator*, Lowell, MA.

## D. INSTRUCTION-RELATED ACTIVITY

### 1. Teaching

#### a. Courses Taught (as primary instructor):

Courses Taught	Semester, Year(s)	Level	Enrollment
26.542 - Colloidal Nanoscience and Nanoscale Engineering	Spring 2012	Graduate	7
	Fall 2007		6
26.534 - Coatings Science and Technology II	Spring 2009	Graduate	6
26.533 - Coatings Science and Technology I	Fall 2012	Graduate	12
	Spring 2011		2
	Fall 2008		8
	Spring 2007		5
26.532 - Adhesives and Adhesion	Fall 2011	Graduate	12
	Spring 2008		15
26.513 - New Plastics Materials	Fall 2010	Graduate	6
26.450 - Nanoscale Transport Phenomena for Manufacturing Nanodevices	Fall 2012	Undergraduate	15
	Fall 2011		15
26.405 - Polymer Science Laboratory	Fall 2007	Undergraduate	28
26.384 - Polymer Science II Laboratory	Spring 2012	Undergraduate	35
	Spring 2011		23
	Spring 2010		29
	Spring 2009		26
	Spring 2008		14
26.383 - Polymer Science I Laboratory	Fall 2012	Undergraduate	32
	Fall 2011		38
	Fall 2010		39
	Fall 2008		23
	Fall 2007		20

\* During Fall 2009, Dr. Budhlall went on maternity leave.

**b. Guest Lectures** (taught by other primary instructors):

Course Title	Lecture	Semester, Year(s)	Level
IB:500: Introduction to Biomedical Engineering.	Smart Polymers for Biomedical Applications	Fall 2012 Fall 2011 Fall 2010	Graduate
26:108 - Introduction to Engineering II	Introduction to Polymer Coatings & Adhesives	Spring 2011 Spring 2010 Spring 2009 Spring 2008	Undergraduate
26:550 - Introduction to Nanomanufacturing	Nanobiocolloids for Drug Delivery	Fall 2010 Fall 2008	Graduate

**2. Students and Postdoctoral Research Associates Funded and Advised**

**a. Postdoctoral Research Associates and Visiting Students Supported:**

- Postdoctoral Associate: Dr. Robinson Anandakathir (2011 – present)
- Visiting graduate student: Marta Ruano-Aldea (07/2011-12/2011)  
Current position: Dept. of Physical Chemistry, University Complutense of Madrid, Spain.
- Visiting undergrad. student: Kara Der (10/2011 – 04/2012)  
Current position: Millipore Corp. Billerica, MA.

**b. Graduate Students Supported and Advised for the Doctor of Philosophy Degree:**

Name	Thesis / Dissertation	Graduate Date
Tatiya Trongsatitkul	Thermoresponsive PNIPAm- <i>co</i> -PEGMA Microgels and Microcapsules for Drug Delivery	Dec. 2012
Amit Garle	Antimicrobial Polymers for Wound Dressings	Sept. 2014 (expected)
Haikun Xu	Shape Memory Polymers for Cardiovascular Stents	May 2015 (expected)
Syed Hassan	Light-actuated Liquid Crystalline Polymers	May 2016 (expected)

**c. Graduate Students Supported and Advised for the Masters of Science Degree:**

<b>Name</b>	<b>Thesis / Dissertation</b>	<b>Graduate Date</b>
Soujanya Muralidhara	Encapsulation of CdSe Quantum Dots in Poly(styrene) for Live Cell Imaging (Thesis)	May 2013 (expected)
Bobby Chasse	Arterial Model for Polymer Biodegradation Studies (Thesis)	Sept. 2013 (expected)
Amit Garle	Photocurable Poly( $\epsilon$ -caprolactone) showing a Shape Memory Effect (Thesis)	May 2011 (now at <i>Nanovirusides</i> )
Deniz Gifford	Polymer Encapsulation Process for Liquid Energy Transfer System (Project)	May 2011 (now at <i>Moldflow</i> )
Neeraj Pardhy	Pickering Emulsions as a Template to Synthesize Janus Colloids (Thesis)	May 2010 (now at <i>NextStage Medical</i> )
Sergio Sanchez	PVC Resin Formulation for GEM4000 Sensor Cards (Project)	May 2010 (now at <i>Boeing</i> )

**d. Graduate Thesis Committee Members (students with their own major advisors):**

<b>Name</b>	<b>Degree, Department Affiliation and Major Advisor</b>	<b>Defense Date</b>
Anoop K. Pal	Ph.D. Health and Work Environment <b>Advisor: Dr. Dhimeter Bello</b>	Sept. 2013 (expected)
Rinky Devre	Ph.D., Plastics Engineering <b>Advisor: Dr. Carol Barry</b>	May 2013 (expected)
Satyam Modi	Ph.D., Plastics Engineering <b>Advisor: Dr. Joey Mead</b>	Dec. 2012 (expected)
Zarif Mohd Aris Farhana	M.S., Plastics Engineering <b>Advisor: Dr. Ramaswamy Nagarajan</b>	Aug. 2012
Mukul Ramesh Atre	Ph.D., Plastics Engineering <b>Advisor: Dr. Carol Barry</b>	Nov. 2008

**e. Undergraduate Researchers Supported and Advised** (from UMass Lowell, except as noted):

<b>Name</b>	<b>Degree and Department Affiliation</b>	<b>Date</b>
Cherie Fletcher <b>(REU Student)</b>	BS., Chemistry, City University of New York (CUNY) Bronx Community College, NYC.	2012
Kimberly Der <b>(REU Student)</b>	BS., Chemical Engineering, University of Massachusetts, Amherst, MA	2012
Peter Jones <b>(Co-op Student)</b>	B.S., Plastics Engineering	2012
Bobby Chasse	BS., Plastics Engineering	2012
Erika Y. Garcia <b>(REU Student)</b>	BS., Chemical Engineering, University of Puerto Rico - Mayaguez Campus, Puerto Rico.	2011
Matthew Vegliante <b>(REU Student)</b>	BS., Chemical Engineering, Villanova University, Philadelphia, PA.	2011
Sany Kong	BS., Plastics Engineering	2011
Peter Jones	BS., Plastics Engineering	2010, 2011
Kara Der <b>(REU Student)</b>	BS., Chemical Engineering, University of Connecticut, Storrs. CT	2010
KaiIp Chan	BS., Plastics Engineering	2009

**f. Student Achievements and Awards:**

**Tatiya Trongsatitkul**

- Prof. Raymond Normandin Plastics Materials Excellence Award, *Plastics Engineering*, **2011**
- 2<sup>nd</sup> Place Student Poster Award, *New England Nanomanufacturing Summit, Boston*. **2009**
- Mold Flow Endowment Scholarship, *Plastics Engineering, UML*, **2007**

**Neeraj Pardhy**

- Dean's Gold Medal, *James B. Francis College of Engineering, UML*, **2010**

**Amit Garle**

- Prof. S.J. Chen Scholarship for Excellence in Polymer Processing, *Plastics Eng., UML*, **2010**
- Merit Scholarship \$1,100; *New England Society for Coatings Technology (NESCT)*, **2009**

## E. SERVICE ACTIVITIES

### 1. Service Activities Related to Professional Field

- 2012**            **SPE ANTEC Student Poster Judge, Orlando, FL** - performed evaluation of projects and conducted relative assessments of projects and interviewed students.
- 2011-12**        **Faculty presenter at Middlesex Community College, Bedford, MA** – recruiting seminar for transfer students for Plastics Engineering undergraduate program.
- 2011-12**        **NH TechFest at Windham High School, Windham, NH** – recruiting event for middle and high school students for the Department of Plastics Engineering.
- 2010**            **Faculty presenter for Girls Day in Engineering** lab tour at UML by ~100 middle school girls from the city of Lawrence, MA school districts.
- 2007-present** **Judge for Middlesex County Middle School Science Fair, Lowell, MA.**
- Every year, served as a Judge of ~1,000, 7<sup>th</sup> to 12<sup>th</sup> grade student science projects.
  - Performed evaluation of projects and conducted relative assessments of projects and interviewed students.

### 2. Service to the University (indicate if department, college or university level)

#### a. UMass System Level Activities:

- 2007-08**        **Member, UMass Life Science Task Force, Shared Infrastructure and R&D Working Group** - a university-wide aspirant vision in the life sciences to promote inter-campus collaborations.

#### b. Establishing International Partnerships:

- 2011**            **Presenter, Women in Science & Engineering (WISE) Meeting at World Boston Event** - invited by the Provost to meet with eight female professors and researchers from Brazil who visited Boston to learn about the current status of women and girls in science in the United States. Meetings were organized with local universities and public and private sector partners encouraging the participation of women in science and technology.
- 2008**            **US-Ireland International Collaboration:** As one of only 5 researchers from UML, took part in a 8 day visit to Queens' University, Belfast, Northern Ireland and Dublin City University (DCU) and Trinity College, Dublin, Ireland. The purpose of the visit was to explore possible programmatic, scholarship and research collaboration between faculty and students at the respective institutions.

**c. University and College Level Activities:**

- 2012-present**      **Plastics Engineering Representative**, Ph.D. in Pharmaceutical Sciences Program.
- 2011-present**      **Faculty Representative** of Plastics Engineering, Honors Council subcommittee on Scholarships.
- 2008-present**      **Member, Emerging Technologies & Innovation Center (ETIC)** advisory group: worked with architects AGI Abbie Gregg, Inc., and CUH2A to design and outfit the Nano-Bio General Lab and the Nano-Bio Clean room.
- 2008-2009**        **Member**, communications committee, UML Nanomanufacturing Center.
- 2007-2009**        **Co-advisor to Society for Women Engineers (SWE)**, co-advisor with Prof. Carol Barry for the UML student SWE chapter.

**d. Department Level Activities:**

- 2011**                **Coordinated** (with Prof. Malloy) the renovations of the Polymer Science Laboratory (Olney 403B).
- 2010-present**      **Faculty Advisor** for NSF REU students each summer.
- 2010-present**      **Guest Lecturer** in numerous courses in the Departments of Plastics Engineering and Biomedical Engineering.
- 2008-present**      **Faculty Senator**, Department of Plastics Engineering representative.
- 2007-present**      **Open house participant** (typically twice every year) for the Department of Plastics Engineering, giving department tours to students, prospective students and their parents and also explaining the programs of study and research available.

## **F. OTHER PROFESSIONAL ACTIVITIES**

### **1. Workshops Attended**

- *Problem-based Learning Workshop*, American Society for Engineering Education (ASEE) Northeast Conference. UMass Lowell, April 2012.
- *Tenure and Promotion Workshop*, UMass Lowell, 2007, 2010 and 2011.
- *National Science Foundation (NSF) CAREER Workshop*, UMass Amherst, April 2011.
- *American Chemical Society Petroleum Research Fund (ACS-PRF) Proposal Writing Workshop*, Philadelphia, PA. August 2008.
- *National Science Foundation (NSF) DMMI Grantees Conference*, St. Louis, MO. July 2006.