

## Varun Srinivasan

Graduate Research Assistant  
Reckhow Lab  
Dept. of Civil and Environmental Engineering  
University of Massachusetts-Amherst

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### Objective

To aid in the world wide effort in directing resource recovery, developing sustainable energy and remediation processes using biology and engineering through research and education.

### Education

#### Graduate Studies:

MS in Environmental and Water Resources Engineering 2010-2012  
Dept. of Civil and Environmental Engineering  
University of Massachusetts-Amherst, Amherst, USA  
**CGPA:** 3.87/4

#### Undergraduate:

BTech in Industrial Biotechnology(Research) 2006- 2010  
Centre for Biotechnology, Anna University, Chennai, India  
**CGPA:** 8.68/10

### Research Interests

Bioelectrochemical Systems, Bioremediation, Energy Recovery, Water Treatment and Disinfection By-Products.

### Research Experience

#### Department of Civil and Environmental Engineering, University of Massachusetts-Amherst - Research Assistant

*Project Advisor- Dr.David Reckhow*

#### **Detection and Analysis of Halobenzoquinones in Present Drinking Water Distribution Systems in the United States of America and HBQ Formation-Routes, Rates and Precursors**

Halobenzoquinones (HBQ) are a newly identified class of disinfection by-products (DBP). This study investigates the occurrence of these compounds in several drinking water utilities in USA. Samples are being analysed for 2,6-Dichloro-1,4-benzoquinone(DCBQ) and 2,6-Dibromo-1,4-benzoquinone(DBBQ) using solid phase extraction and liquid chromatography-tandem mass spectrometry(LC-MS-MS). This project also involves investigating the role of granular activated carbon(GAC) adsorption on these compounds which includes surface-catalyzed formation and degradation reactions.

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### **EDC/PPCP Benchmarking and Monitoring Strategies for Drinking Water Utilities**

**Present**

The goal of this project is to develop a watershed-level protocol for addressing EDC/PPCP monitoring needs utilizing analytical methods, statistics, GIS and spatial analysis.

**Centre for Biotechnology, Anna University, Chennai, India**

*Project Advisor: Dr. P.Gautham*

### **Simultaneous Water Treatment and Electricity Production in a Microbial Fuel Cell(MFC) Jun '09 - Sep '09**

Different aspects affecting electricity generation were monitored – mediator, bacteria, medium etc. using polluted water from a local river in the anode chamber.

### **Microbial Fuel Cells and Amplification of Exoelectrogenesis using the Urey- Miller Setup Dec '09 – June '10**

A salt bridge MFC was constructed and run with an anaerobic sludge from the EID Parry Factory with potassium permanganate as the catholyte. The characteristics of the MFC system were first determined. An experiment was devised to amplify the exoelectrogenesis of the mixed culture of microorganisms in the anaerobic sludge using the Urey-Miller Setup. After a run time of 10 days in the setup, the sludge inoculum was cultured. These cultures were then inoculated into separate MFCs and the power output in the modified sludge was found to be 42 times greater than the unmodified sludge indicating that the experiment had amplified the power output of the system.

### **Grants/Proposals:**

**Centre for Biotechnology and Centre for Technology Development and Transfer, Anna University, Chennai, India**

*Project Advisor: Dr. Meenakshi Sundaram*

### **Bio treatment of Textile Effluents using enzymes Grant Proposal Approved**

The objective of this project was to use enzymes like laccase and hydrogen peroxidase to treat the effluent from wet processing of textiles. Also we aimed to immobilise these enzymes on a suitable substrate and optimise their use in a reactor system.

### **Workshops/Seminars Attended**

- **Recent Trends in Biotechnology and Analytical Instrumentation,2008:** Organised by Sophisticated Analytical Instrument Facility, Indian Institute of Technology, Chennai and Dept. of Plant Biology and Biotechnology, Presidency College, Chennai

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- **Lab Techniques in Enzymology, Training Program, 2008:** Organised by Department of Molecular Biology, DNA Research Centre, Hyderabad.
- **Conference on “Biotechnology: UK and Indian perspectives”:** Organized by the British Council and Anna University, September 2008

### Analytical Skills:

Liquid Chromatography-Mass Spectrometry (LCMS), Inductively Coupled Plasma -Mass Spectrometry (ICP-MS), Gas Chromatography.

### Computer Skills

C, C++, Java, Visual Basic, UNIX, HTML, Microsoft Office, Hardware and Basic Bioinformatics techniques, MINEQL, MINITAB (Statistics), ArcGIS (Geographic Information Systems).

### Extracurricular Activities

- **Part of department soccer team(Intramural) at UMass-Amherst**
- **National Sports Organisation Member in Anna University.**
- **Head of the Website Committee of “Biotechcellence 2009”** a national level technical symposium organised by Centre for Biotechnology, Anna University and core member of the organising committee.
- **Public Speaking:** Compering in Biotechcellence 2009, Host of Adzap-Sampradha 2008(college level cultural festival).
- **Part of School Cricket Team.**

### References

- **Dr.David Reckhow** Email: [reckhow@ecs.umass.edu](mailto:reckhow@ecs.umass.edu)  
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- **Dr.John Tobiason** Email: [tobiason@ecs.umass.edu](mailto:tobiason@ecs.umass.edu)  
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Chairman, Faculty of Technology