

## Karina Kangas

karinakangas@yahoo.com

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### Education

*Expected May 2011*      *San Diego State University, San Diego, CA*  
Bachelor of Science in Chemistry

*June 2007*                *Chula Vista High School, Chula Vista, CA*

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### Research Experience

*September 2008- Present*      **Very Strong Redox-Dependent Hydrogen Bonding between a bis-Dimethylaminophenylurea and a Cyclic Diamide**  
Principal Investigator: Dr. Diane Smith

- The aim of this project is to report studies based on significantly perturbing the strength of hydrogen bonding through a reversible oxidation reaction of an electroactive urea.
- Run cyclic voltammetry of the guest-host redox couple reaction to observe the influence of the guest at different concentrations.
- Synthesized  $\text{NBu}_4\text{B}(\text{C}_6\text{F}_5)_4$  electrolyte used in the experiment.

*January 2009-Present*      **Computational Studies of Hydrogen-Bonding**  
Principal Investigator: Dr. Andrew L. Cooksy

- Use computational methods to better understand the hydrogen bonding behavior of compounds being studied in Dr. Smith's lab, using a combination of density functional theory (DFT) and a realistic solvent model.
- Optimize the most stable geometries to determine the lowest energy bonded complex in the system.
- Use of the Unix system to run Gaussian chemical structure calculation software.

*June-September 2008*      **Synthesis and Electrochemistry of 2-Ethenyl and 2-Ethanyl Derivatives of 5-Nitroimidazole and Antimicrobial Activity against *Giardialamblia***  
Principal Investigator: Dr. Diane Smith

- Measured the reduction potentials of nitroimidazole derivatives in order to see the correlation between their  $E_{1/2}$  values and potency compared to the commonly used anti-giardial agent metronidazole (Mz).
  - Trained students in the lab to measure  $E_{1/2}$  values for the organic compounds using cyclic voltammetry under anhydrous conditions.
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### Publications

Valdez, C.; Tripp, J.; Miyamoto, Y.; Jarowslaw, K.; Hruz, P.; Andersen, Y.; Brown, S.; Kangas, K.; Arzu, L.; Davids, B.; Gillin F.; Upcroft J.; Upcroft, P.; Fokin V.; Smith, D.; Sharpless, K.B.; Eckmann, L. 'Synthesis and Electrochemistry of 2-Ethenyl and 2-Ethanyl Derivatives of 5-Nitroimidazole and Antimicrobial Activity against *Giardialamblia*'

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## Presentations

Kangas, K., Woods, J.E., Smith, D.K. (2009, February) Very Strong Redox-Dependent Hydrogen Bonding between a bis-Dimethylaminophenylurea and a Cyclic Diamide. Poster presentation at the 2<sup>nd</sup> Annual Student Research Symposium, (SDSU) San Diego, CA.

Kangas, K., Woods, J.E., Smith, D.K. (2009, April) Very Strong Redox-Dependent Hydrogen Bonding between a bis-Dimethylaminophenylurea and a Cyclic Diamide. Poster presentation at the 2009 American Chemical Society Southern California Undergraduate Research Conference in Chemistry and Biochemistry, (USC) Los Angeles, CA.

Kangas, K., Woods, J.E., Smith, D. K. (2009, May) Very Strong Redox-Dependent Hydrogen Bonding between a bisDimethylaminophenylurea and a Cyclic Diamide. Poster presentation at the 215<sup>th</sup> General Meeting of the Electrochemical Society, San Francisco, CA.

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## Honors & Awards

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| <i>May 2009</i>               | <ul style="list-style-type: none"><li>• 1<sup>st</sup> Place at The Electrochemical Society Meeting for Poster presentation in Electrochemistry &amp; Technology</li></ul> |
| <i>May 2009-Current</i>       | <ul style="list-style-type: none"><li>• Awarded, Maximizing Science Potential (MSP) Scholarship</li></ul>  |
| <i>September 2008-Current</i> | <ul style="list-style-type: none"><li>• NIH Minority Biomedical Research Support (MBRS) Scholar Recipient</li></ul>  |
| <i>September 2008-Current</i> | <ul style="list-style-type: none"><li>• Member, SDSU Phi Eta Sigma Honor Society</li></ul>   |
| <i>August 2007-Current</i>    | <ul style="list-style-type: none"><li>• Awarded, Compact Scholars Scholarship</li></ul>  |
| <i>May 2009</i>               | <ul style="list-style-type: none"><li>• Awarded, Maximizing Science Potential (MSP) Participation Award</li></ul>  |
| <i>April 2009</i>             | <ul style="list-style-type: none"><li>• San Diego Mesa Alliance 16<sup>th</sup> Annual Calculator Olympics 2<sup>nd</sup> place Winner</li></ul>                           |
| <i>June-December 2008</i>     | <ul style="list-style-type: none"><li>• Louis Stokes Alliance for Minority Participation (LSAMP) Scholar Recipient</li></ul>   |
| <i>Spring 2008</i>            | <ul style="list-style-type: none"><li>• College of Sciences Dean's List-Semester Honors</li></ul>  |

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## Campus/ Academic Affiliation

- Vice President, SDSU Compact Scholars Student Organization
- Member, SDSU Educational Opportunity Program (EOP)
- Member, SDSU Maximizing Science Potential Program (MSP)

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## Professional Memberships

- The American Chemical Society (ACS)
- The Electrochemical Society (ECS)
- The American Society for Biochemistry and Molecular Biology (ASBMB)

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## Languages

- Spanish, speak fluently and read/write with proficiency.

## References

Dr. Diane K. Smith, Analytical Chemistry Associate Professor, SDSU, 619-594-4839 [dsmith@sciences.sdsu.edu](mailto:dsmith@sciences.sdsu.edu)

Dr. Andrew L. Cooksy, Physical Chemistry Associate Professor, Associate Director, Computational Sciences Research Center, SDSU, 619-594-5771 [acooksy@sciences.sdsu.edu](mailto:acooksy@sciences.sdsu.edu)

Dr. William G. Tong, Analytical Chemistry Distinguished Professor, SDSU, 619-594-2442 [willian.tong@sdsu.edu](mailto:willian.tong@sdsu.edu)

Dr. Shelli R. McAlpine, Organic Chemistry Associate Professor, SDSU, 619-504-5580 [mcalpine@sciences.sdsu.edu](mailto:mcalpine@sciences.sdsu.edu)

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