

## Plenary Speakers

Tuesday, July 31, 2012

Dr. Subha Das

8:15 AM – 9:15 AM Eisenhower Auditorium

### Molecular Cuisine: A Spoonful of Context Helps the Chemistry Go Down



Molecular gastronomy, which seeks to understand culinary phenomena and molecular cuisine which adopts ingredients, techniques and equipment typically used in scientific laboratories, have burgeoned in recent years. In converse, the high sensory impact foods and recipes provide a unique opportunity to use the science of food to engage and teach basic principles and advanced topics in chemistry and biochemistry. Molecular cuisine provides an opportunity to reach students' minds through their tastebuds. The talk will detail specific contemporary molecular cuisine elements that highlight how scientific principles permeate students' everyday life and enhance students' knowledge of chemistry and the scientific method. The food context provides a motivating opportunity that directs and sustains learning, as students are motivated to learn when they see the usefulness and relevance of what they are learning. Teaching through the real-world context of cooking permits one to apply chemistry and biochemistry to adapt and develop novel recipes and food presentations. This increases student motivation and, in turn, learning as students can explore real data – edible or otherwise. The single context of molecular cuisine can also enhance student learning by reducing extraneous cognitive load allowing students to focus on the important scientific principles and transformations explored in demonstrations and labs.

Subha R. Das completed his PhD at Auburn University on the synthesis of nucleosides as antiviral agents. Then, as a Howard Hughes Medical Institute postdoctoral research fellow at the University of Chicago, he examined the molecular mechanisms of RNA based enzymes. Over the years, the long hours spent on research and a deep dissatisfaction with cardboard offerings that passed as pizza in the trenches of academia, led him to hone his subsistence skills to maximize flavor in minimal time. Drawing on this and advances in molecular cuisine, Das created The Kitchen Chemistry Sessions at Carnegie Mellon University in 2009. These courses teach chemistry through the real-world context of food, cooking and molecular cuisine. Besides his courses, Das has organized workshops on molecular cuisine for students in grades four through twelve. Das and his students' exhibition "Taste of Chemistry" has been invited to the Geek Art/Green Innovators Festival in Pittsburgh. An assistant professor in the Department Of Chemistry at Carnegie Mellon University, Das's research interests lie in the chemistry of nucleic acids and their applications to biochemistry and nanobiotechnology. His educational goals include communicating and advancing science, particularly chemistry, by making it palatable to a broader audience.