



GEORGIA SECTION

# MEETING Announcement



Tuesday, March 21, 2017

**Dr. Amanda Stockton**

**“Life, the Universe, and Microfluidics:  
Analytical Chemistry for  
Astrobiology’s Big Questions”**

**Location:**

*Heritage Room, Daniel Kaufman Library (Bdg L)  
Georgia Gwinnett College, 1000 University  
Center Lane, Lawrenceville, GA 30043*

**Directions:** [Click Here](#)

**Parking map:** [Click Here](#)

**6:30 pm** Meet and mingle

**7:00 pm** Dinner

**8:00 pm** Speaker

**Menu:**

**Salad:**

Seasonal garden salad with balsamic vinaigrette,  
seasonal fresh fruit salad

**Entrée:**

Stuffed chicken breast with goat cheese and sun  
dried tomatoes

Grilled salmon with sundried tomato pesto sauce

Eggplant lasagna

Pan roasted vegetables

Marinated roasted red potatoes

**Dessert:**

Cinnamon cherry pear crisp

(Includes coffee and iced tea)

**RSVP by 5:00 pm on Friday, Mar 17<sup>th</sup>, 2017 at**

<https://goo.gl/cRT4BK>

**Price:** \$35 regular; \$25 retired, current ACS  
members and K-12 teachers, \$15 students

**Payment:** At the door Cash, credit card, or  
check to: “Georgia Section ACS”

**Note:** *If you make a reservation and then do not  
attend, you will be charged for the meal as we have  
to guarantee the number of meals.*



**Dr. Amanda Stockton**

**“Life, the Universe, and Microfluidics:  
Analytical Chemistry for Astrobiology’s  
Big Questions”**

**ABSTRACT:** *Analytical chemistry and microfluidics offer unique and powerful tools with which to address astrobiology’s big questions, including “is there life beyond Earth,” and “how does life begin and evolve?” A key technology in the search for life beyond Earth is microcapillary electrophoresis ( $\mu$ CE) laser-induced fluorescence (LIF) detection system. These Extraterrestrial Organic Analyzers (EOAs) use a programmable microfluidic architecture (PMA) in tandem with  $\mu$ CE-LIF and enables rapid, automated, and extremely sensitive analyses of organic biomarkers (down to 70 pM or sub ppt) including amines, amino acids, dipeptides, aldehydes, ketones, carboxylic acids, and polycyclic aromatic hydrocarbons. While advanced EOA concepts have been proposed for Mars rover missions and Enceladus fly-by missions, the Stockton group has recently focused on hardening the technology for a 50,000g 5 km/s Europa impact mission. With technology advances including impact-robust optical and microfluidic device manufacture and chemical advances in separation-free chiral analysis, we have begun impact testing with a high-speed airgun and high-acceleration magnetic capture system. Another question we*



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*seek to address using analytical chemistry tools is how does life survive and persist at the extremes with the Field Exploration and Life Detection Sampling for Planetary and Astrobiology Research (FELDSPAR) project studying recent volcanic sites in Iceland and with in situ microbial culturing in geothermal springs in Iceland and Japan. This three-part talk will focus on the European Impactor EOA, FELDSPAR recent results, and give a sneak preview of the isolation chip recent field deployment in Japan*

**BIO:** Amanda Stockton is an Assistant Professor in Chemistry and Biochemistry at Georgia Tech. Stockton's research focuses on the questions of astrobiology, including the emergence and limits of life on Earth, the origins of biomolecules, and the development of microfluidic, portable analytical tools to detect biomolecules on Earth and elsewhere in the solar system. She has extensive experience in the use of  $\mu$ CE-LIF to detect very low levels (sub-ppt) of organic molecules in astrobiologically relevant

samples, including amino acids and peptides in irradiated interstellar ice analogues as well as samples from the Murchison meteorite, Atacama Desert, Saline Valley, Rio Tinto, etc... A large fraction of her research at Georgia Tech centers on instrument development, miniaturization, and testing towards space flight analysis including funded efforts within the NASA ROSES PICASSO program and multiple mission instrument proposals. Her work also includes a strong field component, including sampling and mapping lava tube caves, sampling from multiple domestic and international geothermal regions, and PI of the NASA PSTAR Field Exploration and Life Detection Sampling for Planetary Analogue Research (FELDSPAR) project that studies microbial recovery on recently created Icelandic volcanic regions. She additionally has a strong outreach / education component, including multiple teaching awards and invited educational presentations.