nanoUtah 2015 - Oral Presentations

This year, we return to the introduction and mingle format that formed the basis of the very first nanoUtah events in 2004-2006, which generated the critical mass of faculty and business interest culminating in the funding and construction of the new Utah Nanofab at the Sorenson USTAR building.

It is important to remember the purpose of this "rapid-fire" format:

What nanoUtah15 is NOT:

- This is a workshop not a conference.
- We are not looking for any research publication materials.

What nanoUtah15 IS:

- *"Market Pull" Category:* Problems soliciting solutions, or colleagues soliciting collaborative expertise. A brief introduction to a problem, opportunity (RFP) or product in which your focus is to solicit nanotech collaborators with specific expertise. This might be a physician with a clinical problem to solve, a business with an identified market pain point, or it might be a faculty researcher preparing to submit a proposal with an identified gap in technical capability, or it might be a business or individual seeking assistance preparing an SBIR or STTR.

- *"Technology Push" Category:* Capabilities looking for problems, or researchers with nanotech solutions or approaches seeking to add value to programs, products or businesses. This might include a proposal for an approach to a MRSEC IRG, or might be a broad overview of a nanoparticle synthesis capability…

Format of a typical 6-minute presentation:
Six slides recommended:

- Originate these in either PowerPoint, Keynote or other similar program
- Landscape mode
- No automations
- CONVERT TO PDF

- Introduce yourself
- Introduce your problem, opportunity or unique capability
- Invite participation: What are you looking for in your collaborators? Or what are you offering?

NOTE: The speaker format is a rigid 6 minutes, including time for questions.

The presentations will all be pre-loaded on a single computer in a single file to be operated. Rapid-fire means someone is "up" speaking, the next speaker is "on deck" ready to jump to the podium, and the next speaker is "in-the-hole", present and aware of their pending speaking slot.

Abstract Deadline: September 14, 2015 No abstracts will be accepted after this date. The number of presentations is limited to 25.

If accepted, **you commit to submitting your PDF presentation by Monday September 28.**

Please follow the instructions below and view the sample abstract:

- Speaker Name
- Email Address
- Company/Institution
- Phone Number
- Abstract Title
- List additional authors
- Abstract: 400 words maximum: Briefly introduce your problem, opportunity or unique capability. What are you looking for in your collaborator/s? Or what are you offering?

Abstracts will be reviewed by the session chairs according to technical merit and opportunity for collaboration

SAMPLE ABSTRACT

"Spinning Disc Platform for Digital PCR"

Preferred Session: Devices and Sensors

Presenter: **Scott O. Sundberg**

Bruce K. Gale, Carl T. Wittwer

University of Utah: Departments of Bioengineering, Mechanical Engineering, and Pathology

Digital PCR is capable of detecting single DNA molecules. Rare mutations within an excess of normal DNA can be detected and genetic allelic imbalance can be quantified. This process is expensive and difficult because of the thousands of reactions necessary. Although dilutions can be used to achieve single DNA copy reactions, reduction in sample volume is another solution. The spinning disc platform uses an inexpensive rotating disc to partition the sample into a thousand nanoliter-sized wells.

A PETG sheet was patterned with a spiraling channel having 1,000 wells (30 nl/well), facing radially outward and tangential along the spiral, and then laminated between two similar PETG sheets, thus creating the rotating disc. PCR solution was pipetted into an inlet port towards the center of the disc and spun at 4,000 rpm to load each well. A modified air thermal cycler was used for PCR amplification (40 cycles in 25 minutes) and the disc was interrogated using a CCD camera image to determine how many wells fluoresce for quantification.

All wells were filled with a volume CV of 20%. Single DNA molecule detection is possible with target dilution down to less than an average of 1 copy/well. The spinning disc platform is capable of partitioning and quantifying a sample and can now be applied to multiple digital PCR applications. The spinning disc platform is an improvement over other volume limiting platforms because no valving or pumping is required. Furthermore, rapid air cycle PCR is possible for increased speed and throughput.

Contact Information:
Bruce Gale
bruce.gale@utah.edu