nanoUtah 2015 – Student Poster Contest

A student poster competition will once again be a vital component of the annual nanoUtah conference in 2015. The poster competition is designed to highlight student research in the areas of nanoscience and technology to the broader community, aid in developing presentation skills, encourage student participation in the conference, and engender a competitive spirit among the participants. The four sessions for the poster include:

1. Materials & Characterization
2. Devices & Sensors
3. Energy, Catalysis & Environment
4. Medicine

Please choose a session when submitting your abstract. Monetary awards will be presented to the 1st place posters in each session, and plaques will be presented to the 1st, 2nd, and 3rd place posters in each session. The awards will be presented at the closing of the nanoUtah conference.

Logistics:

- Abstract Deadline: **September 14, 2015**
- Submit on-line at http://www.nanofab.utah.edu/submit_abstract
- Conference Date: Tuesday, October 13, 2015
  Location: The University of Utah campus, Sorenson Molecular Biotechnology USTAR Building (SMBB)
- Poster Dimensions: 48" x 48" maximum

To enter, participants must submit an electronic copy of a MS Word file, 250-word maximum abstract on-line at http://www.nanofab.utah.edu/submit_abstract by September 14, 2015. No abstracts will be accepted after this date. **You must register for the conference and be present during judging to participate in the poster session.** Please follow the instructions below and view the sample abstract:

Abstract Submission:

- Use Arial font, size 10
- Identify your preferred poster session:
  1. Materials & Characterization
  2. Devices & Sensors
  3. Energy, Catalysis, & Environment
  4. Medicine
- Abstract Title (Italic)
- Presenter Name (Bold)
- List additional authors from same institution
- Affiliation (Institution: Departments)
- List additional authors from other institution
- Affiliation (Institution: Departments or Location)
- Contact information, including email
- Abstract: 250 words maximum- MS word file (no figures or references)

Abstract Review Criteria:

- Abstract:
  1. Scientific merit of the research

2. Availability of experimental data
3. Technical writing

- Poster Review
    1. Scientific merit
    2. Experimental design and thoroughness
    3. Validity of conclusions
    4. Organization and visual quality of presentation

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.

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