

International Conference on

# Industrial Chemistry

June 27-28, 2016 New Orleans, Louisiana, USA

## Fostering sustainable disease management: The role of a global citizens movement

**Abraham Badu-Tawiah**

The Ohio State University, USA

The increasing needs of disease management have created new standards for diagnostic techniques to include patient-friendliness, sensitive and reliability. However, current analytical methods, either direct-to-customer testing, point-of-care testing, or centralized detection are not able to meet these criteria. This challenge is pronounced in the developing world where the delivery of healthcare is not only beset by limited resources but also by the uneven distribution and concentration of infrastructure in centralized urban facilities. A new two-point separation on-demand diagnostic strategy has been proposed that combines the advantages of convenient onsite sample collection with reliable centralized detection. This new methodology is based on a paper-based mass spectrometry platform that employs stable and cleavable ionic probes as mass reporter; the ionic probes make possible sensitive, interruptible, storable and restorable on-demand detection. This concept is demonstrated for (i) the capture and detection *Plasmodium falciparum* histidine-rich protein 2 for ultrasensitive malaria detection from non-invasive samples, (ii) diagnosis of onset of liver injury in HIV patients by monitoring the level of alanine transaminase enzyme, and (iii) multiplexed and simultaneous detection of cancer antigen 125 and carcinoembryonic antigen for home-based cancer detection. The strategy also represents a paradigm shift in which portable mass spectrometers can be combined with low-cost paper-based microfluidic devices for direct analysis of large biomolecules.

### Biography

Abraham Badu-Tawiah received his PhD in Chemistry from Purdue University and Post-doctoral studies at Harvard University. He joined The Ohio State University, Department of Chemistry and Biochemistry in July 2014, where he is developing simple mass spectrometric methods for use by non-experts. He has published more than 20 papers in reputed journals and 7 patents, all within 7 years of work.

[badu-tawiah.1@osu.edu](mailto:badu-tawiah.1@osu.edu)

### Notes: