8th International Conference on

Physical and
Theoretical Chemistry

conferenceseries.com

September 13-14, 2021

WEBINAR

Mid-IR spectrometer detection for Volatile Organic Compound Identification

Jianxiong Zhu

School of Mechanical Engineering, Southeast Univerrsity, China

The infrared (IR) spectroscopy technology provides an effective solution to detect chemical structures of volatile organic compounds (VOCs) molecules. However, traditional IR spectroscopy for VOC detection is limited by the weak light-matter interaction resulting in large optical paths. Leveraging the ultrahigh electric field induced by plasma, the vibration of the molecules is enhanced to improve the light-matter interaction. We report a plasma-enhanced IR absorption spectroscopy with advantages of fast response, accurate quantization, and good selectivity. An order of ~kV voltage was achieved from the multi-switched manipulation of the triboelectric nanogenerator (SM-TENG) by repeat sliding. The VOC species and their concentrations were well-quantified from the wavelength and intensity of spectra signal with the enhancement from plasma. Furthermore, machine learning has visualized the relationship of different VOCs in the mixture, which demonstrated the feasibility of the VOC identification to mimic patients.

Biography

Dr. Jianxiong Zhu is an associate Professor from Southeast University, China. He received d Ph.D. from the University of Missouri Columbia in 2015. After that, he worked as assistant professor in Beijing institute of Nanoenergy and Nanaosysem. He also worked as postdoc in KAIST, Korea, and National University of Singapore for several years. His research interests are focused on biomimic sensor, gas sensor, 3D printing for functional sensors, MEMS zero-power sensor, wearable flexible sensor, and gas sensor.