



Dr. Dae-Sik Lee

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Title:

Biochemical sensor device using exhaled breath for mobile health monitoring

Abstract :

I will present on how we have designed, fabricated, characterized and tried to industrialize the olfactory sensor systems using the BioMEMS technologies through talking about small and several research and development cases. I will present three small stories concerning gas sensor devices technologies, application studies on early lung cancer screenings, and diet-monitoring for mobile healthcare. First, as for sensing materials and gas sensors, it is important to accomplish high sensitivities which can detect under a ppm and high selectivities that can detect with excellent specificity. We employed the nano-structured metal oxides materials as sensor materials. I will introduce briefly the recent research results of ours. Secondly, the electronic nose technologies will be presented for early lung cancer diagnostics, along with some gas sensor studies. Through some technical and business procedures, we are starting a startup company, as an ETRI research startup company through ETRI-holdings. Third, the electronic nose technologies for diet monitoring will be presented with clinical testing results. We believe that the sensor-based revolutionary methods could contribute to accelerate the acceptance of mobile healthcare as a practical tool in point of care.

Biography :

Dae-Sik Lee is a principal researcher/project leader in the Bio-Medical IT Convergence Research Division at ETRI and was an associate professor of Department of Computer Software at University of Science and Technology (UST), Daejeon, Rep. of Korea. He received his PhD in electronic engineering under the supervision of Duk-Dong Lee professor from Kyungpook National University (Korea) in 2000, and the other PhD in nanoscience and nano-engineering under the supervision of Shuich Shoji professor in the Department of Electronic and Photonic System, Waseda University (Japan), 2009. He did some technology transfers and cofound three companies by technology investment through ETRI holding company, and two among them got IPO (initial public offering) successfully in KOSDAQ, 2019 and 2021, respectively. Current research interests include the design, fabrication, and characterization of BioMEMS and biochemical devices, Gas Sensor and Systems, microfluidic devices, nano-engineering, sensor array, and their systems.