Theme Seminar

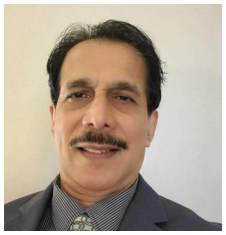
## Solid Solutions for Fluid Challenges

Chandrasiri Jayakody

*Director of Innovation and Product Development, Porex Technologies Corporation, Filtration Group, USA*

In this presentation we will discuss how to use porous polymers, for example, open cell polyurethane foams, sintered plastics, and fibers, in many different applications to address fluid challenges. We will cover what to consider when designing new products and devices by unlocking the potential of using porous polymers to create functional components for absorption, diffusion, filtration, venting, application, wicking, controlled release applications etc. The presentation will focus on one of the main types of porous polymers, open cell polyurethane foam and discuss polyurethane chemistry, methods of manufacturing, material selections including sustainable developments, additives, and some end-use applications.

We will also cover foam characteristics for wound care and cosmetic applications such as pore size, absorption rate, free swell absorption capacity, fluid retention, volume expansion, moisture vapor transmission rate and physical properties of the foam.



***Dr. Chandrasiri Jayakody*** *graduated with a BSc (Honors) in 1981, a Postgraduate Diploma in Applied Statistics in 1986 and an M.Phil. Degree in Natural Products Chemistry in 1990 from the University of Colombo. Sri Lanka. He received his Ph.D. Degree in Organic/Polymer Chemistry from Marquette University, Milwaukee, Wisconsin in 1994 followed by a postdoctoral training (1995-1999) at Florida Institute of Technology, Melbourne, Florida. Dr. Jayakody has been working with Porex Filtration Group as a Director of Innovation and Product Development.*

*He has over 35 years of experience in polymer chemistry, particularly in the fields of polyurethane and has published/presented over 35 papers including three book chapters and holds four US patents. Dr. Jayakody is a member of the ASTM Committee F-04 on Medical and Surgical Materials and Devices and also a member of the Committee E-05 on Fire Standards.*

Theme Seminar

## From Nanopore to Nanowire Sensors: Can Our Health be in Our Hands?

Buddini I. Karawdeniya

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Miniaturised and potable diagnostics for health care monitoring has gained lot of traction with the uproar of pandemics, rising numbers of various health conditions and challenges of supplying diagnostic devices to resource limited settings. My research has been focused on developing nanostructure based sensing platforms—spanning nanopores, metasurfaces and nanowires—to characterize and detect biomedically and pharmaceutically important molecules. Solid-state nanopore sensors have been one of the incredible platforms capable of doing single-molecule level sensing, that have demonstrated incredible potential in detecting and characterising biomolecules like DNA, proteins, polysaccharides and viruses. In addition, my research interests expand to meta optical systems for bio and gas sensing aimed at bio sample and exhaled breath analysis. Nanowire sensors are another platform that have shown exceptional gas sensing capabilities. This talk aims to discuss whether and how these nanostructured sensing platforms can attain the sensitivity and selectivity demanded by health care monitoring and can they be extended to portable and miniaturized sensing devices in the future: can Our Health be in Our Hands?