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## A perspective on quasi-confocal operando Raman microspectroscopy of laminated polymer composite materials

**Eugene S Smotkin**

Northeastern University, USA

Steady state operando confocal Raman microspectroscopy of polymer electrolyte membrane fuel cell catalytic layers is challenged by thermal damage to the catalytic layer resulting from excessive luminescence within a focal point sampling region. Experimentalists must exclude catalyst material along the optical axis path or position the axis between (parallel) the catalytic layers. We demonstrated that operando non-confocal Raman microspectroscopy of a catalytic layer yields high quality spectra elucidating changes in the membrane ion exchange site local symmetry as the fuel cell transitions from open circuit to oxygen reduction potentials. We now explain how non-confocal microscopy enables steady state layer-by-layer spectroscopic profiling with no thermal damage to “black” layers?

### Biography

Eugene S Smotkin has completed his PhD from University of Texas at Austin. He is the Professor of Chemistry Northeastern University and CEO of NuVant Systems Inc., a premier electrochemical technology organization. He has published more than 80 papers in reputed journals and has 15 patents.

esmotkin@nuvant.com

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