

## **Seminar**

### **Viscoelastic and Ion Transport Properties of Solid State Electrolytes for Batteries and Water Electrolysis Cells**

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Graphene oxide membranes with tunable viscoelasticity and ion transport property have been fabricated via simple filtration method and their static and dynamic mechanical properties have been studied in detail. Inspired from the superior proton conductivity of GO membranes, a transparent flexible solid polymer electrolyte membrane has been developed using PEO, PDMS and Lithium salt for their application in rechargeable lithium ion batteries. Along with the studies on the role of polymer alignment in ionic conductivity, the synergistic role of polymer blends in the ion transport of a composite polymer electrolyte is also explored. Similar approach has been extended towards synthesis of a proton conducting solid polymer electrolyte membrane using PEO, PDMS, and perchloric acid for the application in proton exchange membrane water electrolysis. Further, naturally occurring egg shell membranes have been demonstrated for their potential application as a separator in alkaline water electrolysis. Li based coin cells and membrane electrode assembly based water electrolysers are constructed and their performances are being compared with the benchmarked ones.

***Tuesday, Mar 17<sup>th</sup> 2020***

***11:30 AM (Tea/Coffee at 11:00 AM)***

***Auditorium, TIFR-H***