TIFR Centre for Interdisciplinary Sciences
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Students' Annual Seminar

Studies on the Solid State Ion Transport Membranes for Water Electrolysis

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Ion transport membranes having high ionic conductivity and selectivity are inevitable in many fields including in energetics. Graphene oxide (GO) membranes have shown tantalizing promises as potential candidates for water purification and energy storage devices. But structural stability of the membrane is very much essential for their applications. Initial part of the talk will be on the role of intercalated water in deciding the mechanical properties of GO membranes, studied using dynamic mechanical analysis. Inspired from the superior proton conductivity of GO membranes, a novel solid state proton conductive membrane is developed using poly ethylene oxide, polydimethylsiloxane and perchloric acid, and the initial results on its performance in water electrolysis will be discussed. Further, other possibilities of developing high ion conductivity solid state membranes from bio-inspired materials such as egg membrane will also be discussed during the talk, and future perspective of other solid state ion transport membranes will be discussed at the end.

Wednesday, May 17th 2017

4:00 PM (Tea/Coffee at 3:45 PM)

Seminar Hall, TCIS