

**Non-hydrous proton conducting membranes  
synthesized from acid-base complex**

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Proton conducting polymer electrolyte membrane without an assistance of water has been attracted much attention in recent years because the water free proton mobility is necessary for intermediate temperature PEFC electrolyte above 100C. It has been widely recognized that intermediate temperature operation of PEFC has been recently pointed out to overcome most of the technological problems of the current PEFC system such as CO poisoning onto the Pt electrode surfaces, a large activation overpotential and complicated water management. In this presentation, new class of water free proton conducting membranes have been synthesized through acid base complex. The membrane shows large protonic conductivities ( $> 10^{-3}$  S/cm) at high temperatures up to 180C without humidity and was found to be flexible as well as thermally stable due to the temperature tolerant molecular frameworks. The membrane's fast ionic transport without water have been possibly ascribed to rapid proton transfer between the basic molecules.