**Poster Presentation**

**MS074.P12**

*Post-synthetically modified porous covalent framework (PCF) for high proton conduction*

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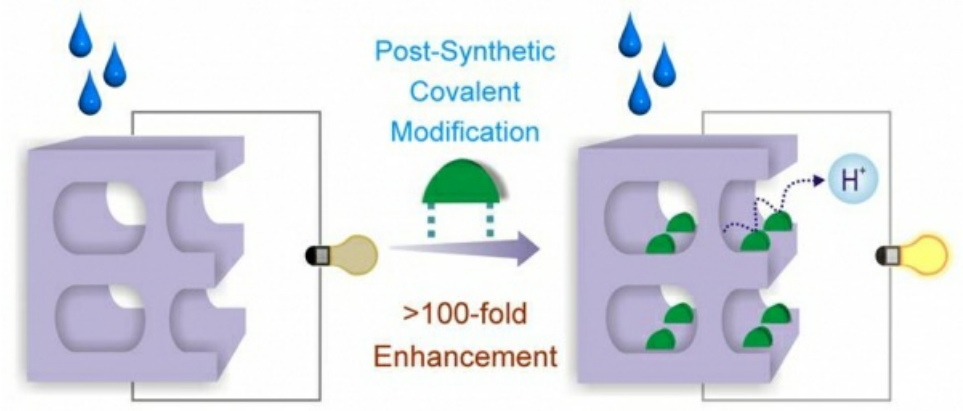
An Ether linkage based highly chemically stable porous covalent framework (PCF-1) has been synthesized. Owing to the acid stability of PCF-1, post-synthetic covalent modification was executed with a simple room temperature reaction for the introduction of free pendant sulphonic acid (-SO3H) groups. Introduction of free Brønsted acid groups into the porous network of PCF-1 forms suitable network which performs as proton conducting pathway. The covalently modified compound (PCF-1-SO3H) presents a remarkably high proton conductivity (ca. 0.026 Scm-1 at 30 °C and 95% RH) which is comparable with commercially available Nafion-based material, with a ~130 fold enhancement in proton conductivity over the parent compound. Notably, this value stands as the highest known value in the regime of post-synthetically modified porous organic frameworks. Activation energy of sulphonated PCF-1 has been calculated from temperature dependent impedance analysis at 95% RH and it has been found to be 0.19 eV, which indicates Grotthuss mechanism is playing the role in proton conduction. Low activation energy for proton conducting materials also required for device fabrication and real time applications.




**Keywords:** Proton Conduction, Post-synthetic Modification, Porous Covalent Framework