Short Communication

Proton-Exchanged Graphite oxide-incorporated $\text{Cs}_x\text{H}_{3-x}\text{PMo}_{12}\text{O}_{40}$ with High Conductivity at Intermediate Temperatures

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Proton conductors operating at a high temperature condition have attracted great attention for intermediate temperature proton exchange membrane fuel cells (PEMFCs). Inorganic electrolyte membrane fabricated from Cs substituted Phosphomolybdic acid ($\text{Cs}_x\text{H}_{3-x}\text{PMo}_{12}\text{O}_{40}$) is considered as a suitable potential candidates for membranes without a liquid phase for PEMFCs using between 160 to 280°C. Graphite oxide is incorporated with this solid material to improve the proton conductivity, and the activation energy is also calculated by the Arrhenius equation. The $\text{Cs}_x\text{H}_{3-x}\text{PMo}_{12}\text{O}_{40}/\text{GO}$ composite electrolyte exhibits the high proton conductivities of $1.7 \times 10^{-3} \text{ S cm}^{-1}$ at 280°C.

Keywords: Intermediate-temperature proton exchange membrane fuel cells; Graphite Oxide; Caesium salts of Heteropolyacid

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