

## FC08

### Proton-Conducting Nanocomposites Based on 3-glycidoxypropyltrimethoxysilane

3-glycidoxypropyltrimethoxysilane계 프로톤 전도성 나노복합체

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Novel fast proton-conducting organic-inorganic hybrid nanocomposites were successfully fabricated. Several kinds of nanocomposite membranes obtained through hydrolysis and condensation reaction of 3-glycidoxypropyltrimethoxysilane (GPTS) and appropriate organic/inorganic modifiers, including tetraethylorthosilicate (TEOS), silicotungstic acid, oxidized 3-mercaptopropyltrimethoxysilane (MPTS), showed good proton-conducting properties. The measured proton conductivity of the fabricated composites was high, and increased up to about  $1.0 \times 10^{-1} \text{S/cm}$  depending on their composition. The high proton conductivity of the composites is due to the proton conducting path through the GPTS-derived 'pseudo-polyethylene oxide (pseudo-PEO)' networks. The molecular water absorbed in polymer matrix is also presumed to provide high proton mobility, resulting in an increase of proton conductivity.