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$CsHSO_4$/MESOPOROUS SILICA COMPOSITES – NEW ELECTROLYTES FOR SOLID ACID FUEL CELLS

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Abstract

High proton conductivity of $CsHSO_4$ opened new opportunities for applications as electrolyte in solid acid fuel cells (SAFC). Relatively recent, it was proved that the accommodation of this solid electrolyte by silica supports improves its proton conductivity. During this work, solid acid $CsHSO_4$ and its composites with mesoporous silica of SBA-15 and MCF-types as host materials were synthesized and studied for the first time. Studies were mainly focused on the influence of mesoporous support structure on the phase transition behavior of $CsHSO_4$. The resulted solids were systematically characterized by powder XRD (low and high angle), nitrogen physisorption, FT-IR and thermal analysis (TG, DTA, DSC).

Key words: cesium hydrogen sulfate, mesoporous silica, composites, solid acid fuel cell

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