

## The preparation and mechanical properties of the $\text{LiAlO}_2$ matrix for molten carbonate fuel cell reinforced by metal wire mesh

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The problem of the crack in  $\text{LiAlO}_2$  matrix for MCFC appeared when the cells are stacked and operated at high temperature has prompted interested in development of reinforced matrix which has high mechanical properties. The matrix composites are reinforced by metal wire mesh and prepared by tape casting and hot pressing methods. Both  $\text{LiAlO}_2$  matrix and that reinforced by sus-304 mesh were prepared and test was carried out in the same condition of single cell test except that it was not included electrodes in the modified cell frame. Mechanical properties of each matrix samples were investigated in 650 °C by differential pressure test. The test using the conventional matrix showed that when the differential pressure increased in a little bit,  $\text{N}_2$  cross-over percentage has grown drastically. However it was observed that  $\text{N}_2$  cross-over percentage was maintained uniformly in the test of reinforced matrix regardless of increasing differential pressure. The incorporation of  $\text{LiAlO}_2$  matrix and metal wire mesh could significantly improve the mechanical properties of the matrix for MCFC.