

Improvement of mechanical strength of α -LiAlO₂ matrix for MCFC using Ni mesh

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Molten carbonate fuel cell (MCFC) has been received much attention due to a high electrochemical conversion efficiency, fuel flexibility, environment-friendly system. For commercialization, MCFC has to ensure long-term operation over 40,000hr. However, Cracks in matrix occurs during operations and they prevent long term operation. To prohibit crack formation in matrix, the enhancement of mechanical strength is significant factor. Although there are many approaches to increase mechanical strength of matrix, it is not sufficient to obtain long term stability yet. In this study, new reinforced matrix which is prepared by lamination method using Ni mesh and α -LiAlO₂ matrix is proposed. Ni mesh is used as supporting material. To confirm enhancement of new reinforced matrix using Ni mesh, mechanical strength of modified matrix is examined using 3-point bending test. Also, the single cell test is carried out to investigate long term stability of modified matrix.