Mechanical Properties of $LiAlO_2$ matrix reinforced with Al nanopowder for molten carbonate fuel cell

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Mechanical strength of LiAlO2 matrix for molten carbonate fuel cell has been extensively developed. Many attempts to improving the strength of the matrix such as using reinforce material. Aluminum particles were considered as reinforced material.
In this work, different size of aluminum particles has been used to observe the effect of reinforce material particle size. Aluminum particles were added by 10% and 20% wt ratio and the particle sizes are 20 meter, 4 m, and 100nm. It was found that the smaller particle size of the reinforce material, the better the mechanical strength. The mechanical strength was tested by using three point bending strength test method.
Aluminum nanopowder reinforced LiAlO2 matrix show a good result with 0.328 KgF/cm2 compared with aluminum with particle size 4 mm and 20 mm which is 0.2155 KgF/cm2 and 0.179 KgF/cm2, respectively.