LOW TEMPERATURE DEPOSITION YSZ ELECTROLYDE FILM FOR SOLID OXIDE FUEL CELL

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Solid oxide fuel cells were widely studied in the recent years due to energy policy. In this study, 8 mol% Yttria-stabilized zirconia (YSZ) were deposited at low temperature 200^{o}C by RF magnetron sputtering process. The film were deposited with Zr-Y alloy target in argon/oxygen mixture atmospheres. The films were post heat treated in the temperature range from 400^{o}C to 1000^{o}C for one hour. The crystalline of the YSZ films was studied by x-ray diffraction(XRD). The cubic phase of YSZ were presented at as-deposition film. The films have a strong preferred orientation on (111) phase. The YSZ cubic (220) and (311) phase began to appear when the heat treatment temperature increased to 800^{o}C. The morphology of YSZ was observed by AFM. The grain size is 1.3nm in the as-deposition film and become to 112 nm when the post heat treat temperature is 1000^{o}C. The films become denses after post heat treatment.

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