Preparation of Al_2O_3 thin film on stainless steel substrate and monolith by spray deposition system

강 건[1], 구기영[1], 노현석[2], 윤왕래[2], 박승빈[1,3,*]
[1]한국과학기술원; [2]한국에너지기술연구원;
[3]초미세화학공정센터
(SeungBinPark@kaist.ac.kr*)

Aluminum oxide (Al_2O_3) thin films have attracted much attention due to their exceptional stability, high dielectric strength and potential applications in diverse areas such as gas diffusion barriers in food packaging. Spray deposition system takes advantage of its low-cost apparatus, availability of multi-component precursors and high deposition rate. This study presents the deposition of alumina thin film using aluminum nitrate solution as a precursor on stainless steel substrate and monolith. This system was operated with various operation conditions such as substrate temperature, nozzle diameter, the distance from nozzle to substrate and atomizing time to improve adherence and control film thickness. The thickness and morphology of Al2O3 coating was characterized by scanning electron microscopy (SEM). The compositional homogeneity of the substrate was identified by Energy-dispersive spectroscopy (EDS).