Spray Pyrolytic Deposition of FeNiOx Thin Film from Aqueous Nickel Acetate Solution

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Iron doped non-stiochiometric nickelous oxide (FeNiOx) in a thin film form is a suitable material for photo-catalytic oxygen evolution in splitting of water. Spray pyrolysis system was used to prepare the thin films. Aqueous 0.1M, 0.2M, 03.M nickel acetate (Ni-ac) solutions were prepared. The solutions were mixed with iron nitrate solution of different concentrations (0.1M, 0.2M 0.3M) in equal volumes. The aerosols of Ni-nitrate and Fe-nitrate solution mixtures were prepared by using of pressurized air without ultrasonic nebulization. It was spread onto an SS (stainless steel) substrate preheated upto 370oC in a sprayer chamber in air. The preparative parameters such as distance from spray nozzle to substrate, pressure of air as carrier gas, spray time, etc. The films were optimized to obtain the uniform films of FeNiOx. The FeNiOx films were characterized by X-ray diffraction (XRD), Auger electron spectroscopy (AES). Furthemore we can investigated that the most optimized component concentration of FeNiOx through Cycle voltametry(CV).