

Self-Assembled monolayers assisted thin film growth of aluminum doped zinc oxide by spray pyrolysis method

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Self-Assembled monolayers assisted thin film growth of aluminum doped zinc oxide by spray pyrolysis method. Transparent, conductive and high - preferential c- axis oriented thin films of Aluminum doped zinc oxide (AZO) were deposited on self assembled monolayer (SAMs) modified glass substrates by chemical spray pyrolysis technique. Zinc acetate was used as a precursor solution and the aluminum doping was achieved by the addition of aluminum chloride in the methanol solution of zinc acetate. We demonstrated that crystallinity of AZO films can be improved using self assembled monolayer (SAMs) modified glass substrate. SAMs with different terminal functional groups such as $-CH_3$, $-CF_3$ and, $-NH_2$ were fabricated on glass substrates. Parameters that are used to verify the quality of the film such as structural, electrical and optical properties were performed by XRD, SEM, Hall measurement and UV-Vis spectrum measurements. From the results we observed that SAM with $-CH_3$ terminal group remarkably improves the quality of the film, while the other groups improve the quality moderately. Our finding suggests a novel approach of improving the crystallinity of AZO film with spray pyrolysis technique.

Biography

Muluken Aklilu Solomon has completed his M sc degree in Physical chemistry from Addis Ababa University, Ethiopia and now he is studying his PhD from National Taiwan University of Science and Technology, Taiwan. Before he started his study, he was a lecturer in Bahir Dar University, Ethiopia. He has published 1 paper in reputed journal.

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