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Effect of oxalic acid solution to optimize texturing of the front layer of thin film sloar cells

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In this work, we deposited Al2O3doped ZnO (AZO) thin films by direct current (DC) magnetron sputtering method with a 40° tilted target, for application in the front layer of thin film solar cell. Wet chemical etching behavior of AZO films was also investigated. In order to optimize textured AZO films, oxalic acid (C_2 H_2 O_4)has been used as wet etchant of AZO film. In this experiment we used 0.001% concentration of oxalic acid various etching time, that showed an anisotropy in etching texture of AZO films. Electrical resistivity, Hall mobility and carrier concentration measurements are performed by using the Hall measurement, that are $6\times10^{-4}\Omega$ cm, 20～25 cm^2/V-s and $4\sim6\times10^{20}$, respectively.

Keywords: AZO, Magnetron sputtering, Texturing, solar cell, oxalic