

## Optical properties of the O<sub>2</sub> plasma treatment on BZO (ZnO:B) thin films for TCO of a-Si solar cells

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In order to achieve a high efficient a-Si solar cell, the TCO (transparent conductive oxide) substrates are required to be a low sheet resistivity, a high transparency, and a textured surface with light trapping effect. Recently, a zinc oxide (ZnO) thin film attracts our attention as new coating material having a good transparent and conductive for TCO of solar cells<sup>1-2</sup>. In this paper the optical properties of H<sub>2</sub> post-treated BZO (boron doped ZnO, ZnO:B) thin film are investigated with O<sub>2</sub>-plasma treatment. The BZO thin films by MOCVD (Metal Organic Chemical Vapor Deposition) are investigated and the samples of H<sub>2</sub> post-treated BZO thin film are tested with O<sub>2</sub>-plasma treatment by plasma treatment system with 13.56 MHz as RIE (Reactive Ion Etching) type. We measured the optical properties and surface morphology of BZO thin film with and without O<sub>2</sub>-plasma treatment. The optical properties such as transmittance, reflectance and haze are measured with integrating sphere and ellipsometer. This result of the BZO thin film with and without O<sub>2</sub>-plasma treatment is application to the TCO for solar cells.