

## **NON-DESTRUCTIVE EVALUATION OF BIFACIAL SOLAR CELL THROUGH SEM CHARACTERIZATION**

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### **ABSTRACT**

Bifacial solar cell is a specially designed solar cell for the production of electricity from both sides of solar cell. Bifacial solar cell is an active field of research since its advantages on making photovoltaic (PV) more competitive together with current efforts to increase efficiency and to lower material costs. This paper reports on the fabrication of bifacial solar cells with a structure of n+pp+. This fabrication used phosphorus-oxytrichloride (POCl<sub>3</sub>) diffusion as emitter source, and aluminium (Al) diffusion using screen-printing process as back surface field (BSF). This n+pp+ bifacial structure was sandwiched by silicon nitride (SiN) as anti reflective coating, silver (Ag) as a front contact and silver/aluminum (Ag/Al) as a back contact. The n+ and p+ layer was analyzed using Scanning Electron Microscope (SEM). The open circuit voltage (VOC) obtained by this bifacial solar cell was 580 mV for the front surface and 560 mV for the back surface, while the short circuit current (I<sub>sc</sub>) achieved were 0.47 A and 0.23 A for a front and back surface, respectively.

Keywords: Bifacial solar cell; POCl<sub>3</sub> diffusion; Al-alloyed back surface field; surface Combination

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