

# Local Back Contact Formed by Screen Printing and Atomic Layer Deposited Al<sub>2</sub>O<sub>3</sub> for Silicon Solar Cell

조영준, 장효식

Graduate School of Green Energy Technology, Chungnam National University, Daejeon 305-764, Korea

In rearpoint contact solar cell and the PERC (passivated emitter rear contact) type cell, surfaces were passivated by SiO<sub>2</sub> or Al<sub>2</sub>O<sub>3</sub> to increase solar cell efficiency. Therefore, we have investigated the effect of surface passivation for crystalline silicon solarcell using mass-production atomic layer deposited (ALD) Al<sub>2</sub>O<sub>3</sub>. The pattern which consists of cylinders with 100um diameter and 5um height was formed by PR patterning on Si (100) substrate and then Al<sub>2</sub>O<sub>3</sub> of about 10nm and 20nm thickness was deposited by ALD. The pattern in 10 nm Al<sub>2</sub>O<sub>3</sub> film was removed by dipping in acetone solution for about 10 min but the pattern in 20 nm Al<sub>2</sub>O<sub>3</sub> film was not. The influences of process temperature and heat treatment were investigated using microwave photoconductance decay (PCD) and Quasi-Steady-State photoconductance (QSSPC). The solar cell process used in this work combines the advantage of using the applicability of a selective deposition associated with a ALD passivation and the use of low-cost screen print for the contacts formation.

**Keywords:** Local contact, ALD, Screen printing, Al<sub>2</sub>O<sub>3</sub>, Solar cell