

Development of photocatalytic PVA/TiO₂ nanofiber membrane by electrospinning and its application for Air Filtration

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Nanofibers have a large potential in air filtration applications. In this work, we have developed a photocatalytic polyvinyl alcohol (PVA)/TiO₂ nanofibers membrane for the treatment of air filtration by using electrospinning method. PVA were electrospun into nanofibrous membranes and TiO₂ nanoparticles were loaded in PVA nanofibers in various contents from 10% (w/w) to 50% (w/w). The UV-Vis spectra were conducted for testing the existence of TiO₂ nanoparticles in PVA fibers. SEM analysis indicated that TiO₂ nanoparticles were loaded on the surface of PVA fibers and dispersed linearly along the fiber direction, which originated from the effect of polarization and orientation caused by high electric field. X-ray diffraction (XRD) was used to determine the crystalline of the membrane. Tensile strength was measured to evaluate the physical properties of the membrane. Therefore, our work suggested that PVA/TiO₂ nanofiber membrane has a potential application in air filtration area.

Keywords: Polyvinyl alcohol/TiO₂, nanofibers, air filtration, electrospinning

실리콘 태양전지 후면 전계 형성 메카니즘 연구

박성은, 송주용, 최철중¹, 탁성주, 김현호², 김성탁, 강민구, 권순우³, 윤세왕³, 김동환[†]

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We have studied mechanisms of back contact formation in Al evaporation and screen printed Al paste for Si solar cells by TEM analysis. We observed that Si diffuse into Al during heat up. The Si diffusion process made vacancies in Si wafer. The Al began to seep into the Si wafer (Al spike). During heat down, the Al spike were shrink which causes the doped region (BSF).

Keywords: 실리콘 태양전지, 후면 전계