PET에 성막된 ITO 박막재의 작업압력에 의한 기계적 · 전기적 특성

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Mechanical and Electrical Properties of ITO Thin Film Deposited on PET on Work Pressure

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Key Words: Elastic modulus(탄성계수), Hardness(경도), Resistivity(저항률), Nano-indentation(나노 인덴테이션), Indium tin oxide(인듐 주석 산화물)

Abstract : The thin film of indium tin oxide (ITO) was prepared by the inclination opposite target type DC magnetron sputtering equipment onto the PET substrate at room temperature using oxidized ITO with In_2O_3 and SnO_2 in a weight ratio of 9:1. The elastic modulus, hardness and resistivity of the ITO films prepared at different work pressure are determined. The results show that the variation of work pressure during film deposition could vary significantly the elastic modulus and hardness of the ITO film. It also can be seen that a minimum exists in the film resistivity for ITO film prepared according to the variation of work pressure. However, a X-ray diffraction peak of ITO thin film is not clear, regardless of the work pressure.

철도차량 차체 필렛 용접이음재의 피로설계에 관한 연구

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A Study on Fatigue Design for Fillet Welded Joint of a Railroad Car Body

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Key Words: Fillet welding(필렛 용접), Welded joint(용접 이음재) , Fatigue design(피로설계) Gas arc welding(가스아크용접), Fatigue strength(피로강도), Maximum stress(최대응력)

Abstract : Stainless steel sheets are widely used as the structural material for the railroad cars and the commercial vehicles. These kinds structures used stainless steel sheets are commonly fabricated by using the gas welding. For fatigue design of gas welded joints such as fillet and plug type joint, it is necessary to obtain design information on stress distribution at weldment as well as fatigue strength of gas welded joints. And also, the influence of the geometrical parameters of gas welded joints on stress distribution and fatigue strength must be evaluated. Therefore, in order to establish a reasonable and systematic fatigue design criterion for the long life design of the gas welded body structure, in this study, stress distribution around the gas welded joints subjected to tensile load was numerically analyzed. Also, the ΔP-Nf curves were obtained by fatigue tests. Using these results, ΔP-Nf curves were rearranged in the $\Delta\sigma$-Nf relation with the maximum stress at the edge of fillet welded joint.