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An X-Ray Photoelectron Spectroscopy Study on the Annealing Effects for Al/Glass Interface During Aluminum Induced Texturing Process

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Abstract – The aluminum induced texturing method offers an effective light trapping scheme by random texture that is formed by U-shaped craters on the glass surface. The texture is mainly shaped by the reaction between Al and SiO₂. However, the reaction mechanism is not totally understood. Besides, the influence of other components present in the glass such as Na₂O, CaO, MgO, etc. is neglected. In this study, the evolution of Al films on soda-lime glass during annealing has been inspected by depth resolved X-ray photoelectron spectroscopy. The elemental distribution of Si, Al and O have been investigated for different annealing durations and compositional analysis has been conducted for Na, Ca and Mg in addition to Si, Al and O. According to results, a relevant evolution model for annealing process has been constructed.

Keywords: *Depth profile; X-ray photoelectron spectroscopy; Aluminum; Float glass; Thermal annealing; Aluminum induced texturing.*

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