ABSTRACT

A solar cell device (2) is formed into a laminated structure by providing a transparent oxide electrode (12) on the surface of an insulating substrate (10) which is a transparent glass substrate, providing a surface treatment layer (14) by performing oxidative plasma treatment on the surface of the transparent oxide electrode (12), providing a silicon nitride film (16) on the surface treatment layer (14), and laminating a p-type semiconductor layer (18), a buffer layer (20), an intrinsic semiconductor layer (22), an n-type semiconductor layer (24), and a metal electrode (26) on the silicon nitride film (16) in that order. Thereby, the surface of the transparent oxide electrode (12) is chemically stabilized by the surface treatment layer (14), resulting in improved open circuit voltage.