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Dye-sensitized solar cells employing TiO2 nanotube arrays modified by hydrothermal process MEIDAN YE, 5152940804, CHANGJIAN LIN, ZHIQUN LIN — Dye sensitized solar cells (DSSCs) based on TiO2 nanotube photoanode prepared by a facile combination of electrochemical anodization and hydrothermal process exhibited a remarkable performance. Well-ordered and smooth TiO2 nanotube arrays fabricated by a two-step anodic oxidation were subjected to hydrothermal process, thereby creating roughness on the surface of nanotubes and leading to increased dye loading. Subsequently, the resulting nanotubes were used to fabricate DSSC in backside illumination mode, yielding a significantly high power conversion efficiency of 7.12% that was further increased to 7.75% upon oxygen plasma treatment.

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