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Three-dimensional hollow platinum-nickel bimetallic nanoframes for use in dye-sensitized solar cells

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Pt_3Ni bimetallic nanoframes with 3D electrocatalytic surfaces are used as the counter electrode for the DSSC, achieving an enhanced photovoltaic conversion efficiency of 7.75% compared to that using the thermal decomposition Pt CE (7.26%). This is due to the catalytic surfaces of this 3D hollow rhombic dodecahedron nanoframes are composed of the Pt-rich structure, which has a high catalytic activity for the reduction of I_3^- to I^- and a low charge transfer resistance at the electrolyte/electrode interface.