

Characteristic of V-doped  $\text{Sr}_{0.92}\text{Y}_{0.08}\text{TiO}_{3-\delta}$  anode for Solid Oxide Fuel Cells

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$\text{Sr}_{0.92}\text{Y}_{0.08}\text{Ti}_{1-x}\text{V}_x\text{O}_{3-\delta}$ (SYTV) with perovskite structure was investigated as an alternative anode to utilize hydrocarbon fuels in solid oxide fuel cells. To improve electrochemical performance of  $\text{Sr}_{0.92}\text{Y}_{0.08}\text{TiO}_{3-\delta}$ (SYT), titanium in B-site of the perovskite was substituted to vanadium. Due to the aliovalent substitution in SYT, oxygen vacancy was introduced leading to increasing ionic conductivity. As increasing substitution amount of vanadium, the oxygen vacancy increased. The SYTV was compatible with YSZ electrolyte at synthesizing and operating condition. As result of this substitution, the cell performance was 21.77 mW/cm<sup>2</sup> with 1% vanadium substituted in H<sub>2</sub> at 800°C and 94.54 mW/cm<sup>2</sup> with 12% vanadium substituted in H<sub>2</sub> at 800°C.