Development and performance evaluation of Sr_2CeO_4 - $SrCe_{0.85}Y_{0.15}O_{3-\delta}$ based electrochemical hydrogen isotopes

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- An electrochemical–-based hydrogen isotope sensor using in-house synthesized mixed-phase Sr_2CeO_4 - $SrCe_{0.85}Y_{0.15}O_{3-\delta}$ ceramic has been developed.
- The sensor has been tested at 400, 450 and 500 °C with calibrated concentrations of hydrogen gas mixtures (Ar+100 ppm H_2 in reference side and Ar+20000 ppm H_2 in working side).
- The performance of the sensor has been found to be promising at 500 °C.
- The potential obtained was very stable and had less noise. The deviation of around 55 mV between experimental and theoretical potential has been observed.

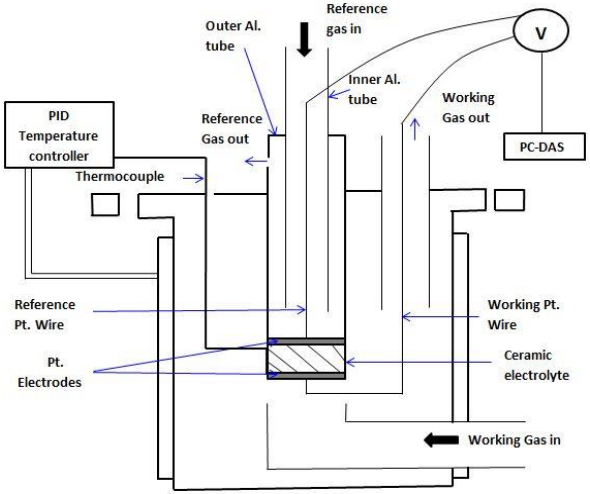

Fig. 1: Schematic of sensor testing setup

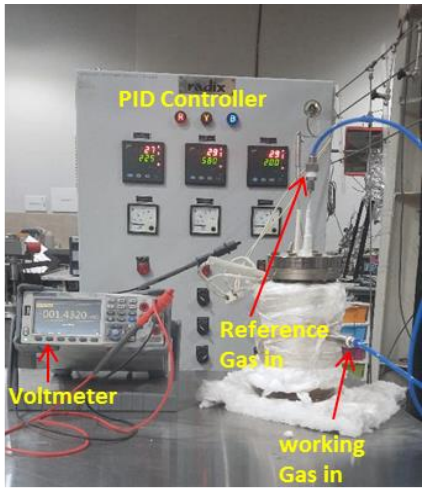

Fig. 2: Sensor testing setup

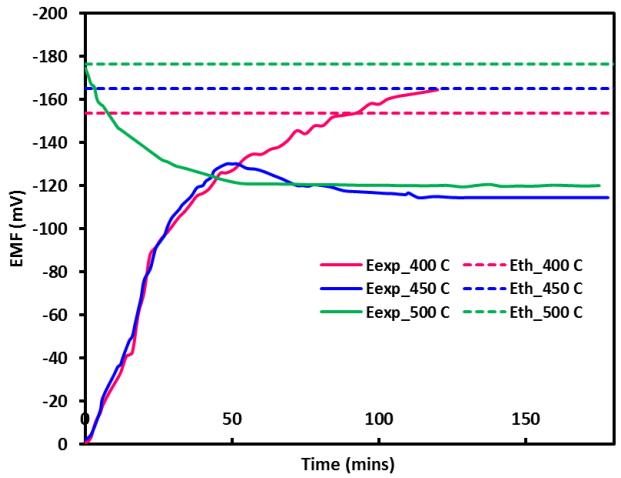

Fig. 3: Measured electrochemical potential with time at 400, 450 and 500 °C

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