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CORROSION TESTING OF CANDIDATES FOR THE ALKALINE FUEL CELL CATHODE

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It is desirable to employ a corrosion screening test for catalyst or support candidates for the fuel cell cathode before entering upon optimization of the candidate or of the catalytic electrode. To this end, corrosion test electrodes, intended for complete immersion and maximum wetting, have been made with 30-40 vol. % Teflon; with perovskites this is about 10-15 wt %. The candidates were synthesized by methods intended for single-phase product without special emphasis on high surface area, although the substances tested were no coarser than 2 m<sup>2</sup>/g. A typical loading was 25 mg/cm<sup>2</sup> of the pure substance, usually on gold screen, a few mm<sup>2</sup> of which were left bare for contacting. Contact to the gold lead wire was made by welding with a micro-torch or a spot-welder.

Corrosion testing consisted of obtaining current-voltage data under flowing inert gas in the potential region for reduction of O<sub>2</sub>. The electrode was immersed in 30% KOH. Observations were made at 20°C and 80°C, and the results compared with data from gold standards. Results with some perovskites, pyrochlores, spinels, and interstitial compounds will be discussed.

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