

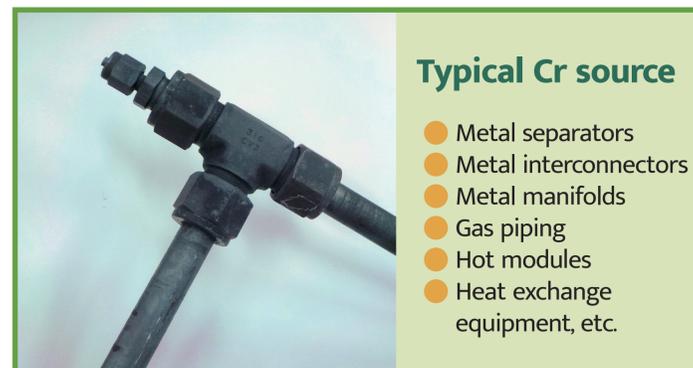
Evaluation of Chromium evaporation of stainless steel under SOFC operating conditions

We can evaluate Cr evaporation in any atmosphere having different p_{O_2} & p_{H_2O} . Volatile elements other than Cr can be checked!

Circumstance/The purpose

Chromium poisoning

- Under SOFC operating conditions, Cr^{6+} volatilizes from the metals used in SOFC stack systems (such as stainless steel SUS430 and SUS304) and converts back to Cr^{3+} on the cathode, causing a deterioration in electrode performance.
- Quantifying the amount of Cr volatilization allows for detailed analysis of the relationship between chromium poisoning and electrode performance and degradation. Quantifying the amount of Cr volatilization is extremely important for electrode design and electrode life evaluation. It is also possible to evaluate metallic materials and components composed of metals based on the amount of Cr volatilization.

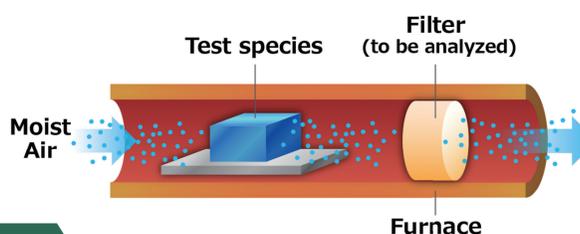


Chromium volatilization measurement technology

- Volatile components are collected downstream of the gas using a special material filter, and then analyzed afterwards to identify the volatile components and evaluate the amount of volatilization.

Temp.	400°C~1100°C
Duration	From a few minutes to 10,000 hours+
Atmosphere	Compatible with high dew point gases and anode gases

$$\text{Cr volatilization amount} = f(\text{temperature, gas composition, flow rate})$$

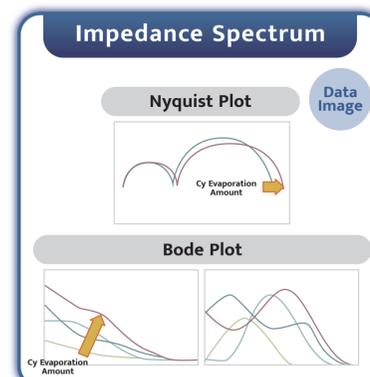
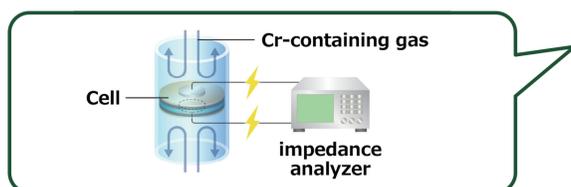


Volatile components other than Cr can also be evaluated

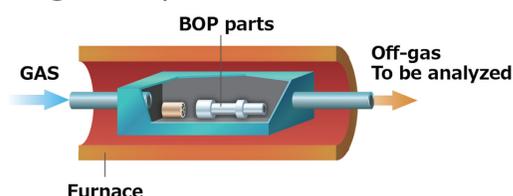
Suggestion

We conduct electrolysis evaluation tests using your cell stack.

- Cell performance evaluation in chromium-volatile gas**
Using impedance and current interruption methods, cell performance is evaluated in relation to the amount of Cr volatilized.



- Evaluating the amount of chromium volatilization from BOP**
The amount of Cr volatilization was evaluated under conditions simulating the operating conditions of SOFC (temperature, gas composition, flow rate).



Evaluation on actual equipment also available

