Abstract

Cover:

Golden nickel sulphide crystals have grown on a sample of Hastelloy C-276 (59Ni 16Cr 15Mo 5Fe 4W 0.007C Co V), after a 240 h corrosion experiment in HCl, H₂S, CO₂, CO and H₂ containing gas atmosphere, at 680 °C. The violet spots are chromium sulphide, which formed below the nickel sulphide and reached the surface. Contrary to the expectations, the crystals grew towards the gas flow. Hastelloy C-276 was proposed to show only minor corrosion in various gas atmospheres at high temperatures. Interestingly enough, it showed poor resistance in this particular gas atmosphere at 680 °C and higher mass losses than for example an austenitic stainless steel.

More detailed information can be found in: A. Schmid, G. Mori, R. Haubner, M. Weil, S. Höning, Behaviour of S31400 and S32205 steels in HCl- and H₂S-containing gas atmospheres under a low oxygen partial pressure between 480 and 680 °C, Materials and Corrosion 2018, 69, 1328