

PRODUCTION OF MoF₆ VIA ELECTROCHEMICAL FLUORINATION

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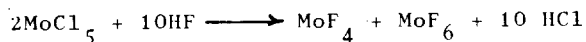
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A new process for the electrochemical preparation of the fluorinating agent MoF₆ is described. Solutions of MoF₄ in anhydrous HF are electrolyzed in a multielectrode cell at 20°C, 5.4+5.7V cell voltage and 50+100 A/m² current density, using nickel anodes and cathodes. A new modified Simons cell has been designed, equipped with a stirring system for the efficient recirculation of the electrolyte and with a condenser held at -15°C.

The reaction product MoF₆ (b.p. 35°C) dissolves in the electrolyte, contributing to its conductivity and in part is volatilized together with HF and some byproduct fluorine.

Gaseous MoF₆ passing beyond the condenser can be easily collected and separated in a nickel trap held at low temperature.

The process presents substantial advantages in comparison with known alternatives, such as the synthesis of MoF₆ from the elements Mo and F₂ at 250°C or the dismutation reaction :



Preparation of the starting material MoF₄, operating conditions and experimental results are illustrated.