

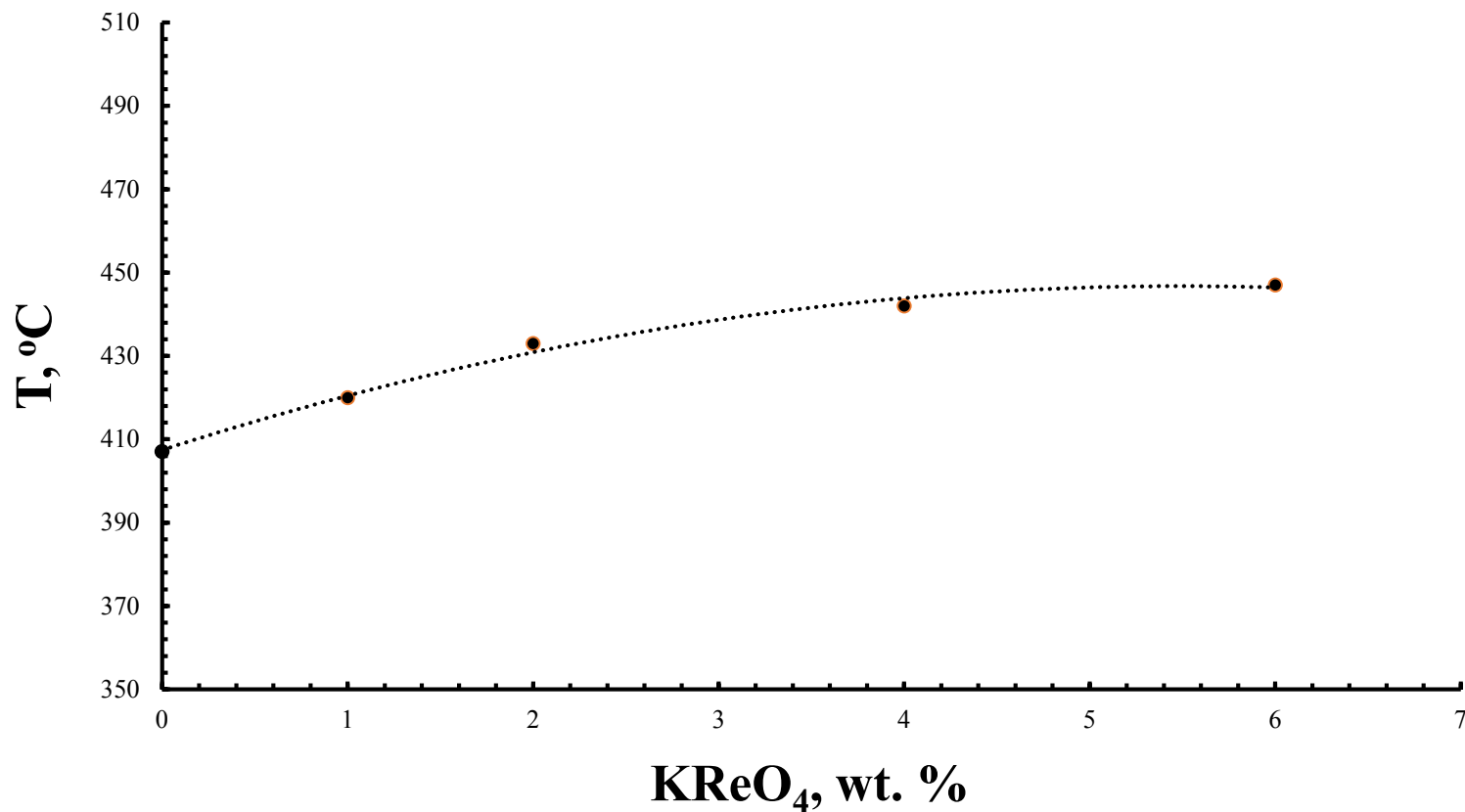
# **Rhenium behavior in the $\text{KF-KBF}_4\text{-B}_2\text{O}_3\text{-KReO}_4$ melt**

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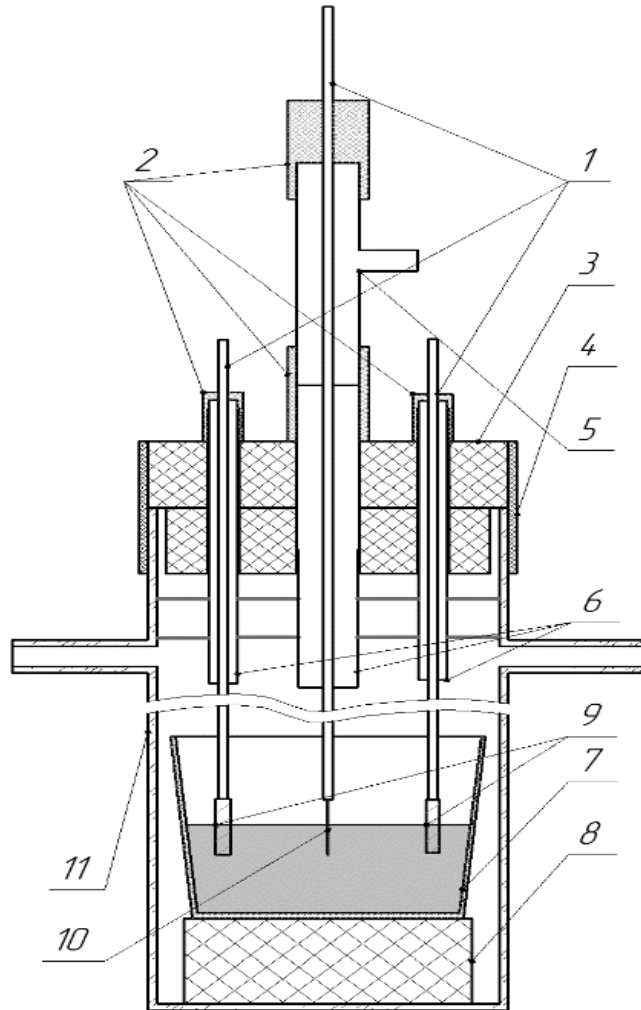
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# Dependence of the $\text{KF-KBF}_4\text{-B}_2\text{O}_3$ melt liquidus temperature on the $\text{KReO}_4$ addition



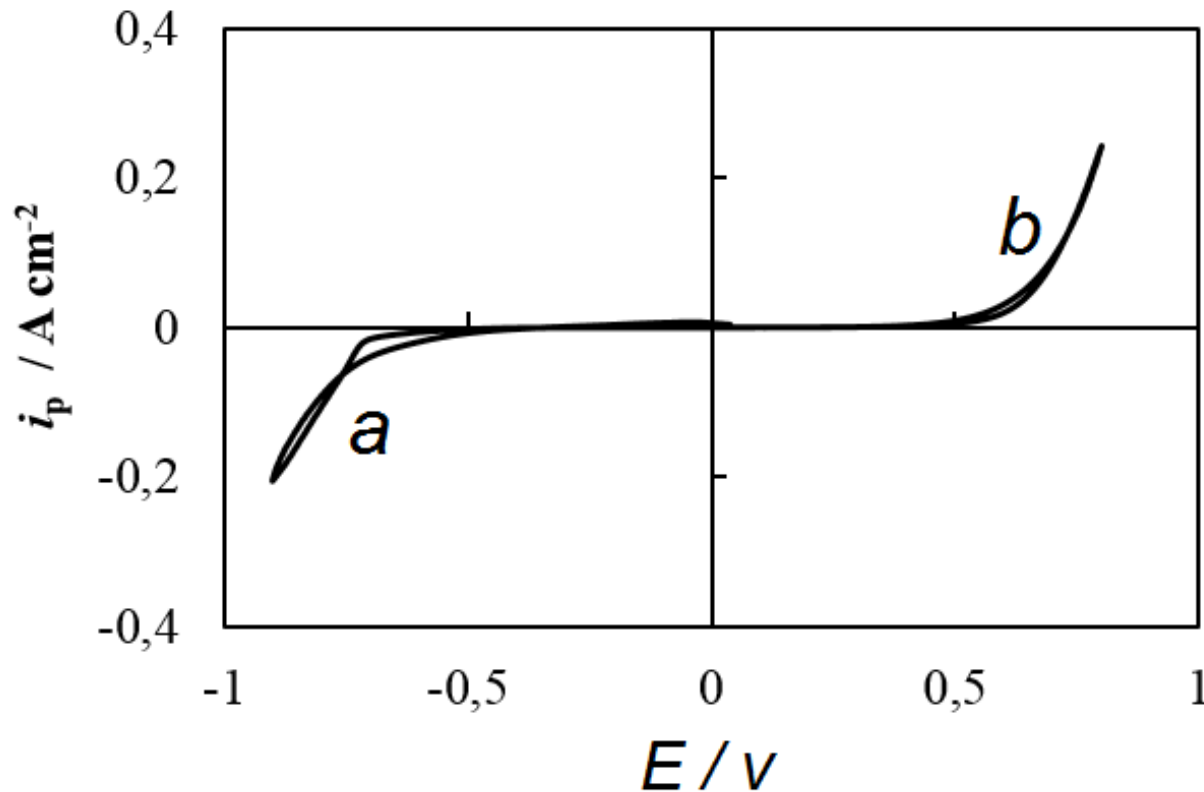
# Electrode process of Re reduction in the $\text{KF-KBF}_4\text{-B}_2\text{O}_3\text{-KReO}_4$ melt



Scheme of the three-electrode electrochemical cell used to study the Re reduction processes:

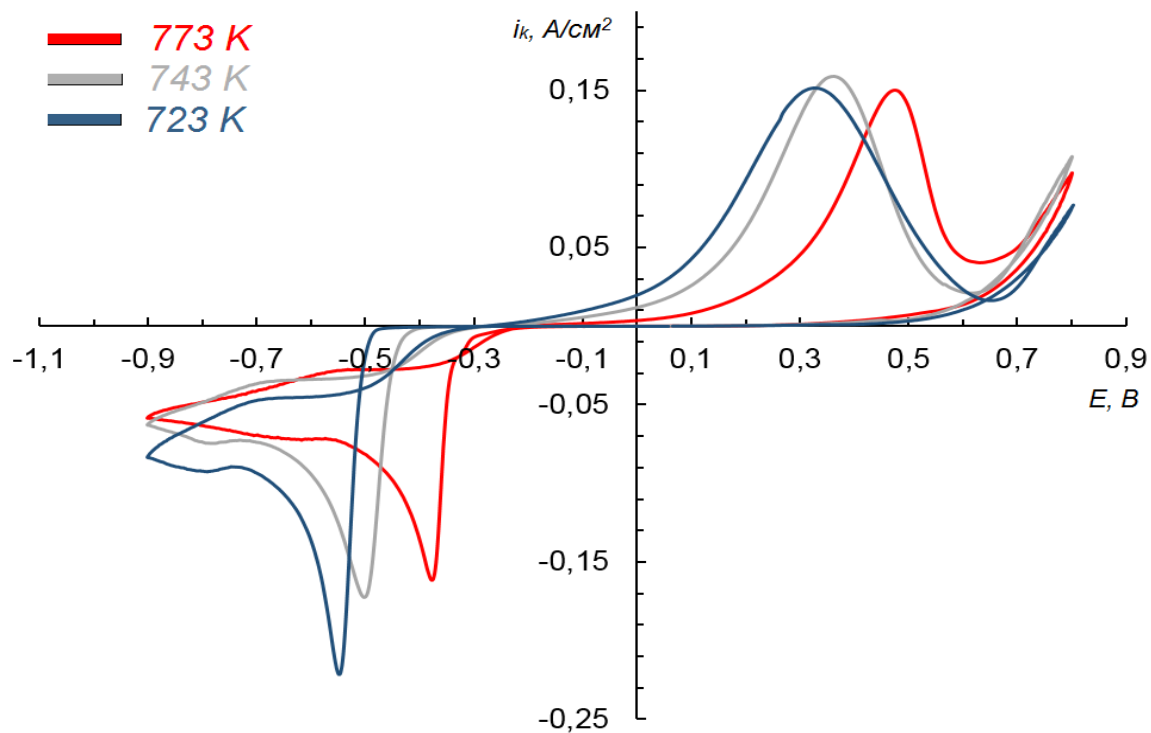
- 1 – current leads;
- 2 – rubber seals;
- 3 – fluoroplastic cover;
- 4 – sealing ring;
- 5 – adaptor (transitional sluice);
- 6 – protective covers;
- 7 – glassy carbon container with melt;
- 8 – graphite support;
- 9 – Re electrodes;
- 10 – glassy carbon working electrode.

# Typical curve of the cyclic voltammetry of the $\text{KF-KBF}_4\text{-B}_2\text{O}_3$ electrolyte



Scanning rate – 0.1 V/s  
Glassy carbon substrate

# Cyclic voltammograms of the $\text{KF-KBF}_4\text{-B}_2\text{O}_3\text{-KReO}_4$ (0.88 wt% Re) melt



Scanning rate – 0.4 V/s  
Glassy carbon substrate

# Conclusions

- The liquidus temperature of the  $\text{KF-KBF}_4\text{-B}_2\text{O}_3$  system has been measured for the first time and it was found to be equal to  $410^\circ\text{C}$ .
- The dependence of the  $\text{KF-KBF}_4\text{-B}_2\text{O}_3$  liquidus temperature on the  $\text{KReO}_4$  concentration was obtained.
- The influence of the electrolyte temperature on the rhenium cathode reduction on glassy carbon was studied by the cyclic voltammetry method.

Thank you for attention