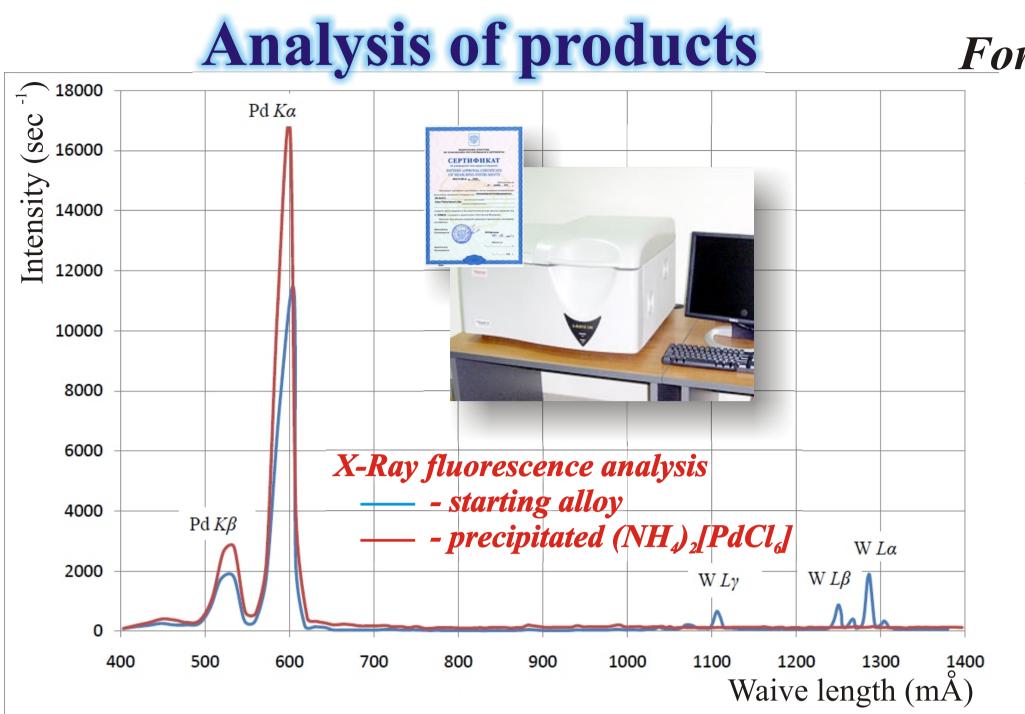
Scheme of W-Pd alloy recycling technology The W-Pd alloy was fluorinated with KBrF₄ after preparation with chemical surface Pd-W alloy 80% - Pd, 20% - W etching. Volatile WF, was sublimated and condensed on next stage. Oxidized Chemical etching HNO₃ of alloy surface palladium compound was transferred Ablution with H₂O to solution in chloride form and precipitated in (NH₄)₂PdCl₆. Last compound Drying t=120 °C $KBrF_4$ decomposed to metallic Pd after (excess 100 %) Oxidative fluorination with KBrF₄ drying and reducing melting t=400 °C, P=1atm in muffle furnace Cake after fluorination Light fraction Cake (KPdF₆, (Br₂, WF₆, BrF и oth.) KF, KBrF₄) НС150 г/л Hydrolysis of cake Condensation of WF₆ Deleting of F, Transportation tank filled with KBrF4 Getting of chloride complexes, t~100°C NH₄OH (20%) Precipitation of (NH₄), PdCl₆ pH=3,5÷4,5; t=25 °C Coagulation pH=3,5÷4,5; t=80 °C; τ =4 hours Filtration Liquid Solid (NH₄)₂PdCl₆ Precipitation of residual Diamide hydrate Obtained Pd powder Drying t=120 °C Pd, t=80 °C Reducing melting Filtration t=1700 °C Precipitation of Pd, Liquid Pd metal impurity



For analysis of products
on different stages
following equipment
was used:
Atomic emission
spectral analysis
with inductively
coupled plasma
(iCAP6300 DUO),
IR-spectrometer
(Nicolet 5700),

X-rays fluorescence analysis (Quant'X USA; Spektroskan Max-G, Russia).

In current research palladium of the "Prioksk Plant of Nonferrous Metals" was used

Conclusions

- 1. Feasibility of KBrF₄ application in Noble metals technology was investigated
- 2. Scheme of alloys based on refractory and Noble metals recycling technology was suggested.
- 3. As a result palladium powder (99,95 %) was obtained during the implementation of suggested technology.



References

- 1. Inorganic Chemistry. Editor: Tretyakov U. D. Vol.3: Chemistry of transition elements, 2007.
- 2. Mitkin V. N. Spectrochimica Acta, 135-175 (2001)