

Treatment of detonation diamonds by metalcontained plasma of high frequency arc discharge and their properties

Kolonenko A.L.^{1,2}, Osipova I.V.¹, Vnukova N.G.^{1,2}, Tomashevich Ye.V.³, Chiganov A.S.², Churilov G.N.*^{1,2}

¹*L.V. Kirensky Institute of Physics SB RAS, 660036, Krasnoyarsk, Russia*

²*Krasnoyarsk state pedagogical university, 660049, Krasnoyarsk, Russia*

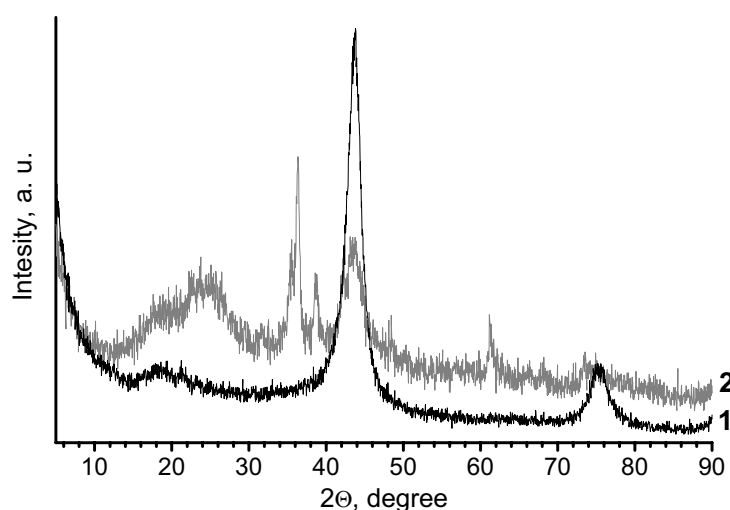
³*Institute of Chemistry and Chemical Technology SB RAS, 660049, Krasnoyarsk, Russia*

**e-mail: Churilov@iph.krasn.ru*

Detonation diamonds have stable cover usually. This cover contained carbon and prevented from their using.

In this work the results of ultradispersed diamonds investigation after plasma treatment were presented. For arc plasma generation we developed the setup on the base of fourstreams high frequency plasmatron placed on the leakproof cell. Four plasma streams formed plasma cone. Ultradispersed diamond fed into plasma along the cone axis with the flow of inert gas. Initial ultradispersed diamond passed into metal cover diamond with 100% conversion.

Investigations by X-ray powder diffraction (see Fig.), XPS and Raman spectroscopy have shown that ultradispersed diamonds covered by thin layer of copper and its oxides. The presence of copper oxides connected with insufficient purity of using gases. Also we plan to present the investigation results of ultradispersed diamonds covered by palladium and nickel.



X-ray powder diffraction patterns of (1) initial ultradispersed diamonds before and (2) after treatment of plasma contained copper.