Titanium oxide plasma melt

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Currently, titanium oxide is used as a material for photocatalytic sterilization in the medical, food and mycobiological industries, as well as for solving environmental problems.
Currently, the use of plasma technology to ensure high-quality melting of titanium oxide involves overcoming the full melting temperature (2116 K) and its subsequent rapid cooling. As a result, we can expect the formation of a vitrified state.
An air high-voltage three-phase AC plasma torch was used in the experiment. The plasma torch was located on the top cover of the reactor. A water-cooled metal pipe was used to remove the waste plasma stream. The temperature on the surface of the melt was measured using a two-beam pyrometer.
The composition and properties of the resulting sample were studied using a scanning electron microscope and an X-ray diffractometer.