

8. METHOD OF DISTINGUISHING THE MONOXIDE OF IRON (FeO) FROM THE SESQUIOXIDE (Fe_2O_3) IN SILICATES AND OTHER COMPOUNDS.

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This test serves to indicate, with great certainty, the presence or absence of FeO in bodies generally. It is performed as follows:—A small quantity of black oxide of copper (CuO) is dissolved in a bead of borax on platinum wire, so as to form a glass which exhibits, on cooling, a decided blue colour, but which remains transparent. To this, the test-substance in the form of powder is added, and the whole is exposed for a few seconds, or until the test-matter begins to dissolve, to the point of the blue flame. If the substance contain Fe_2O_3 only, the glass on cooling will remain transparent, and will exhibit a blueish-green colour. On the other hand, if the test-substance contain FeO , this will become at once converted into Fe_2O_3 at the expense of some of the oxygen of the copper compound; and opaque red streaks and spots of Cu_2O will appear in the glass, as the latter cools.*

NOTE:—Although this test is quoted by Plattner—perhaps the best criterion of its accuracy—it is passed over, without mention, in many works on chemical analysis. The writer may therefore be allowed to call to mind, in proof of its efficacy, that by its use in 1848 he pointed out the presence of FeO in the mineral *Staurolite* (*Chem. Gaz.*, July 15, 1848; see also *Erdmann's Journal für pract. Chem.*, XLVI., 119), nearly thirteen years before this fact—now universally admitted—was discovered and announced by *Rammelsberg* (*Berichte d. Kongl. preuss. Akad. d. Wiss. zu Berlin*: März, 1861.)

pipe characters of Phosphocerite were given in a paper on that mineral, published in the journal of the Chemical Society of London in 1848; and these characters are referred to, from the paper in question, in the third volume of *Henry Watt's* English translation of *Gmelin's Handbuch*, published by the Cavenish Society in 1849, as well as in both the third and fourth editions of *Dana's System of Mineralogy*.

* Provided too much copper oxide be not dissolved in the glass—so as to become reduced *per se*—this test may be performed with either a reducing or an oxidating flame. If the method be tried with a few bodies of known composition (in some of which FeO is present, and in others absent) the operator will see, at once, that it offers no risk of failure—always assuming, of course, the absence of other reducing bodies, a point easily ascertained by the blowpipe.