IMPACT RECRYSTALLIZATION OF ORANGE GLASSY SPHERES

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Glassy spheres from fines 72141.12 , 72701.26 and 74220.108 show frequently opaque spots under the light microscope. They originate from the surface of the spheres and radiate towards the interior, where they fade into filaments. The center of each spot is either excavated, or marked by a foreign glassy or mineral fragment, welded onto the sphere.

Mineralogically, the dark spots consist of dendritic ilmenite and of subordinate octahedral chromite, ascertained by SEM, EMP, XRD and reflecting LM. The spots present sometimes a sixfold symmetry, due to the regular branching of the ilmenite. The latter acts sometimes as a parting surface in fractured spheres. A few spots are marked on the surface of the sphere by a ring of finely crystallized rutile and felspar.

The origin of the opaque spots is rather easily ascribed to multiple impacts between flying spheres and dust. The rings of rutile and felspar, deposited around the impact points, show that selective vaporization took place at the same time.

Irregular, broken fragments, composed of the same ilmenite and chromite, are found in the fines. They could be attributed to an exotic petrographic component, were they not recognized as parts of former glassy spheres.