

as 939 and 711 million ounces, respectively, for the whole Bushveld. This represents 75 per cent and 50 per cent of the world's platinum and palladium resources, respectively. Cawthorn (3b) estimates that for the Bushveld Complex as a whole, the proven and probable reserves are sufficient for 40 years production at the current rate of production. The Bushveld Complex is truly a world class deposit and unlikely to be duplicated by any new discovery.

On-going Research

The potential for improving current recoveries of value minerals from the ores of the Bushveld Complex is significant and, to this end, research in all fields of geology, mining, mineralogy, minerals processing and in the various refining processes is on-going. Optimisation of these resources, via process technology and other technical measures, is one of the major functions of the continuing research undertaken at the Amplats Research Centre.

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Submicron Platinum Metals Powders

Uniform platinum and palladium powders of submicron size are important conductor materials for the electronics industry, but their synthesis is difficult. Researchers from the Université de Picardie Jules Verne, France, have now reported a room temperature synthesis of spherical platinum and palladium submicron particles by controlled hydrazine reduction of $PtCl_6^{2-}$ and $Pd(NH_3)_4^{2+}$, respectively, in glycols (K. Tekaia-Elhsissen, F. Bonet, S. Grugeon, S. Lambert and R. Herrera-Urbina, *J. Mater. Res.*, 1999, **14**, (9), 3707-3712).

Platinum powders produced in this way contain particles with a bimodal size distribution which can be narrowed by synthesis at $-5^{\circ}C$. Palladium powders are monodisperse, of average particle size 0.1–0.3 μm ; their particle size and distribution can be controlled by modification of the solution chemistry.