

## DETERMINATION OF MECHANISMS OF ABRASION IN WC/CO HARDMETALS BY *IN SITU* MICRO-TRIBOLOGY TESTING

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WC/Co Hardmetals make excellent wear resistant parts due to their combination of high strength and relatively good fracture resistance. Although the abrasion of these materials has been studied for many years, the mechanisms of damage are still not sufficiently understood to enable knowledge based optimisation of the materials.

This paper reports results on experiments made on fine and coarse grained Hardmetals. The main results come in the form of videos or sequences of images showing damage accumulation. It was found that a major form of damage was fracture and fragmentation of the WC grains. These fragments combined with the binder phase but were eventually pushed out of the abraded area as the test proceeded. Larger fragments of material including whole grains were also removed from the surface.

The videos of damage accumulation were supplemented by EBSD analysis of the samples in the early stages of damage, by measurements of the volume of the damage by topographical back-scattered electron imaging, and by FIB sectioning of samples after experiments to look at sub-surface damage.