

XRD Analysis of Tungsten Carbides with Cobalt Binder

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Abstract. The paper deals with the influence of deep cryogenic treatment on the structure of sintered WC-Co carbides from the aspect of XRD analysis. We demonstrate the influence of cryogenic processing on the change of grain size, the development of Co phases in the structure, and the influence on the residual stress. The sintered WC-Co carbides are very powerful material for machining tools, especially for machining of hard metals. The size of grains has a significant influence on the lifetime of carbides. The crystallography structure, crystallite size, and residual stress as a function of temperature were investigated by X-ray diffraction. The results of the measurements and computations of crystallites size, residual stress, and other aspects show the influence of cryogenic treatment on the structure.