

Title: Preparation of micro Ti (C,N) based cermet powders

Abstract: Ti(C,N) based cermet material is the best choice for manufacturing industry and military product etc. The study intends to use cubic β -Co as the binder phase to strengthen the construction of cermets. At the same time, (Ti,W,Mo,Ta)(C,N) powders will be added to form two kinds core-rim morphology, so that to optimized the whole microstructure. In this study, the Co powder with face-centered cubic structure was obtained by the solid-phase reaction of high-energy ball milling. and, a solid phase chemical reaction, and the carbothermal reduction-nitridation method were used to prepare (Ti,W,Mo,Ta)(C,N) powders. Secondly, we mixed the Co and (Ti,W,Mo,Ta)(C,N) powders, then, the powder mixtures were pressed into rectangular samples and sintered in a pressure sintering furnace, whereby Ti(C,N)-based cermets with two types core-rim structure: black core-white rim and gray core-white rim, were prepared. The results show that, the study get a new style cermets which can prevent cracks from extending, has excellent toughness performance, which can beneficial the comprehensive performance of the cermet materials.