

# APPLICATION OF SPD/PM PROCESS TO PRODUCE A TiC/Ti<sub>5</sub>Si<sub>3</sub> NANO GRAINED COMPOSITE USING LIGA MICRO-STRUCTURE

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## Abstract

The SPD/PM (Severe Plastic Deformation / Powder Metallurgy) Process is one of the most effective means for producing non-equilibrium phase. Mechanical Alloying (MA) is one of such a SPD/PM process and often enables the amorphous phase formation and nano grained microstructure. We have applied the MA process to produce a TiC/Ti<sub>5</sub>Si<sub>3</sub> nano composite for the micro-mold. Powders of elements Ti and SiC whose composition was Ti-20mass%SiC were blended for MA, and the MA powder whose average particle size is 20~30 μm, has an amorphous structure. The MA powder is filled in a micro-mold produced by LIGA process, and cast together by SPS (Spark Plasma Sintering) in order to fabricate a new micro-mold as a transcription of the micro-mold by LIGA process. As the result, this process proved successful for making the micro mold made of the TiC/ Ti<sub>5</sub>Si<sub>3</sub> composite.

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