

**NET SHAPED ARTICLES HAVING  
COMPLEX INTERNAL UNDERCUT FEATURES****ABSTRACT**

This invention describes a novel production method of manufacturing metal/ceramic articles with complex internal undercut features using powder injection molding processes. The shape of the undercut/hollow feature is initially molded using a disposable material such as a degradable polymer. The PIM feedstock is then molded onto this to form the required shape geometry, in effect encapsulating the polymeric feature in the PIM feedstock. The resulting two-material part is then sent for processing which removes the polymer through solvent or thermal process. After the polymer and the binder have been removed, the part now comprises a powder skeleton that contains the internal undercut feature within itself. After sintering the result is a metal/ceramic part having an internal undercut feature. The technical advantage of the present invention is that it does not require complex toolings or costly secondary operations while retaining the flexibility to design any internal undercut features of complex geometry. An additional embodiment of the invention is also disclosed in which a solid structure is encapsulated inside a hollow shell said structure being free to move around inside the shell.

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