THE PRODUCTION OF COMPOSITE MATERIALS BY POWDER INJECTION MOLDING AND INFILTRATION

ABSTRACT OF THE DISCLOSURE

Metal-metal or metal-ceramic/carbide composite materials are fabricated by combination of powder injection molding and infiltration. This is achieved by first forming a composite system having a matrix component and an infiltrant layer. The matrix component is formed from a metal or ceramic/carbide powder, that is of a higher melting point, admixed with a first binder. The infiltrant layer is formed from a metal powder, that is of a lower melting point, admixed with a second binder. The first and second binders are subsequently removed from the composite system during a debinding process. The composite system is then heated in a sintering furnace to coalesce the matrix component into a matrix phase having a network of interconnected pores, and to effect infiltration of the infiltrant layer into these pores to form the composite material of the present invention.

Figure 1