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Abstract

Ti-based composites are finding ever-increasing applications as biomaterials because of their excellent performance. For this research, an attempt has been made to study the tribological, thermal and corrosion properties of Ti/nanodiamonds (NDs) nanocomposites. The powder mixtures were consolidated by spark plasma sintering process. Microstructure and composition of the samples were investigated by transmission electron microscopy and X-ray diffraction techniques. Based on the tribological results, wear rate decreased significantly with increasing NDs, especially at a load of 200 N. This was attributed to the strengthening of the nanocomposites by ND reinforcements. Wear mechanism is considered to be micro-ploughing and delamination for pure Ti as well as abrasive and adhesive wear for the Ti/NDs