Study of Surface Morphology and Topography of Pure Iron Machined by WEDM

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Owing to its magnetic properties, pure iron is among materials investigated with a view to their use for improving existing memory media. Experimental equipment made of pure iron is prepared by using lithographic methods and magnetron sputtering, putting specific technological requirements on the input material. The non-conventional method of wire electrical discharge machining (WEDM) was used for the pure iron target in order to meet those requirements. The present study was devoted to the topology and morphology of the iron target machined by the electrical discharge method. Morphology was examined by scanning electron microscopy (SEM) as a method capable of visualising the contrast between the pure iron and the copper from the electrode material diffusing on the machined surface. Energy dispersive X-ray spectroscopy (EDX) was used to analyse the local chemical composition. The machined surface topography was examined based on its areal and profile parameters.

Keywords: WEDM, Electrical Discharge Machining, pure iron, morphology of surface, topography, chemical composion

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