ENDPOINT DETECTION IN CHEMICAL-MECHANICAL POLISHING OF CLOISONNÉ STRUCTURES

Abstract

A method is described for fabricating a cloisonné structure, in which a top surface of a metal oxide layer (22) is made coplanar with a top surface of a metallic structure (21) formed on a substrate (1). A nitride layer (31) is deposited on at least the top surface of the metallic structure (21), and the metal oxide layer (22) is deposited over the metallic structure (21) and the nitride layer (31). The metal oxide layer (22) is then polished by a chemical-mechanical polishing (CMP) process using a slurry, to expose the nitride layer (31) on the top surface (31a) of the metallic structure. Polishing of the nitride layer (31) causes ammonia to be generated in the slurry. The ammonia is extracted as a gas from the slurry, and a signal (501) is generated in accordance with the ammonia concentration. The CMP process is terminated in accordance with a change in the signal (501). In a preferred embodiment, the metal oxide is aluminum oxide , the nitride is aluminum nitride, and the nitride layer is deposited as a conformal layer on the substrate and the metallic structure.

Fig. 7