142ah An Investigation of Nickel-Based Amorphous Alloys and Their Corrosion Products

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The present research is an investigation of nickel-based amorphous alloy films that afford them extraordinary resistance against corrosion. Due to the lack of long-range order and grain boundaries, these metallic glasses demonstrate high corrosion resistance compared with their crystalline counterparts. The data generated in this course of study is of consequence to developing new materials of greater corrosion resistance as well as enhancing their physical, mechanical, and magnetic properties. In this study, a number of amorphous Ni-P, Co-P, and Ni-Co-P alloys were produced by electrodeposition technique. The presence of phosphorous metalloid results in the formation of an amorphous structure and a lowering of the corrosion rate. Due to the charge transfer from the metal to the P in these materials the metal-P samples appear to indicate a strong bonding, which leads the materials to demonstrate the amorphous nature.