Pulse reversal plating of nickel-cobalt alloys

Electroforming, as a versatile process for fabrication of durable tools, is experiencing an increasing interest with the start of commercial use of products with micro or nanofeatures. Electroformed tools can be utilised for polymer, glass and metal replication processes and, in addition, when extreme demands, in terms of tool accuracy, process temperature and tool wear, are requested. In order to meet these demands, electroforming of hard nickel alloys is an obvious way forward. This paper presents several electrolytes from which it is possible to deposit nickel-cobalt alloys with high hardness (>550 HV), low internal stress and easy maintenance. Moreover, different organic complexing agents - as well as alternatives to boric acid - have been investigated.

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