

Nickel Microneedles Fabricated by Sequential Copper and Nickel Electroless Plating and Copper Chemical Wet Etching

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Nickel microneedles have been fabricated by a sequential process of electroless copper and nickel plating and copper wet chemical etching. An electroless plating solution was injected using an external syringe pump and made to flow through the inside of a copper base tube. The temperature gradient along the length of the copper base tube brings about different plating thicknesses along its length, resulting in a wide inlet and a sharp end with a microaperture. The diameter of the microaperture could be readily controlled by plating time such that microneedles with various diameters could be easily acquired. To verify their applicability, the fabricated microneedles have been applied to a probe for cell capturing and to a needle for microdispensing.

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