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# A systematic study on metal-assisted chemical etching of high aspect ratio silicon nanostructures

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## Abstract

Metal-assisted chemical etching as an anisotropic wet etching method is an important step in semiconductor device processing capable of producing high aspect ratio semiconductor nanostructures. Silicon (Si) nanostructures as the most important material for current semiconductor industry, have been widely used in different ways. This study describes experiments on the etching rate and morphology of Si nanostructures produced by metal-assisted chemical etching approach. In addition, the effects of the synthesis conditions such as noble metal and hydrogen peroxide concentration were investigated by Taguchi method. The obtained results indicated that the rate of etching and homogeneity of the structures assisted by silver was much better than the structures assisted by platinum.

**Keywords:** Metal-assisted etching; Silicon nanowires; Hydrogen peroxide; Taguchi method

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