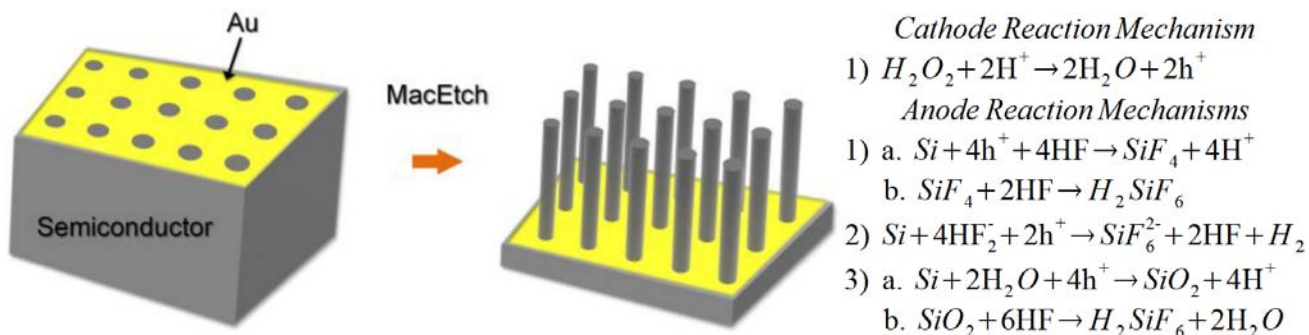


## Gallium Phosphide Micro Pillars Fabrication by Metal-Assisted Chemical Etching

Limin GUO

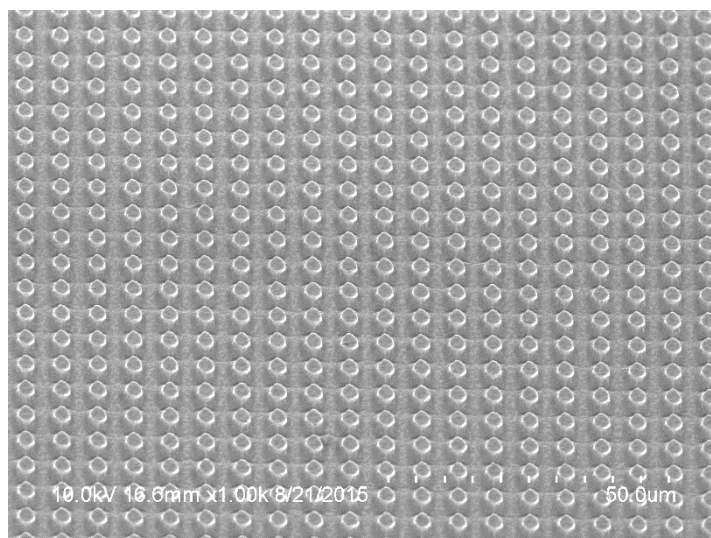
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I will introduce my research on the metal-assisted chemical etching (MacEtch) procedure for micropillared gallium phosphide (GaP) fabrication when I stayed in UIUC this summer.



**Figure 1.** The silicon nanorod array fabricated using MacEtching procedure (left) and the etching procedure (right). The holes were generated by catalysis of Au.

GaP is one of promising materials for solar fuel production by photoelectrochemical (PEC) water splitting and/or CO<sub>2</sub> reduction because of the band gap of 2.27 eV for visible light absorption and appropriate conduction band edge positions. For enhanced solar energy conversion, GaP nanoarrays without inner and surface defects are desired due to anti-reflection and light trapping and facile charge separation. The MacEtch has been firstly reported Prof. Xiuling LI in UIUC and now extensively used to fabricate Si nanostructures (Figure 1), and there are much less studies for fabrication of nanostructured III-V semiconductors. GaP as a new materials for MacEtch processing, in the presentation, I will introduce the fabrication of GaP micropillars made by MacEtch of (001) GaP wafer.



**Figure 2.** The Gallium Phosphide Micro Array fabricated by MacEtch Method.