# Practice quiz HF bath for SiO2 and glass wet etching

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## Questions:

0 points possible (ungraded)

1. What is the main advantage of a buffered HF (BHF) over a pure HF bath for the Pyrex etching process?

- (●) A Au layer is not required in preparing the mask
- ( ) One can completely avoid mask underetching effects
- ( ) The etching rate is significantly enhanced, yielding a higher throughput
- ( ) The Cr layer is not required for depositing the photoresist mask on the Pyrex substrate

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**Explanation**

A mixture of 40 wt% $NH_4F$ with 49 wt% HF is called buffered oxide etch or buffered HF (BHF). The use of BHF produces a slower and less aggressive etch so that photoresist masks can be used. Photoresist would be very strongly degraded in pure(=49%) HF baths. In a Pyrex etching process in a BHF solution, there is no need for the deposition of an expensive Au mask, as photoresist can be maintained in the BHF bath. See "HF bath for SiO2 and glass wet etching" video from 5:05 to 10:45 for detailed explanations.

2. What is a commonly used application of HF etching?

- ( ) To make the wafer surface more hydrophilic
- ( ) To remove the residual organics from the wafer surface
- ( ) To thermally stabilize the structures on the wafer
- (●) To form free standing structures

✔

**Explanation**

This type of etching is used for locally removing a $SiO_2$ layer to define free-standing structures like used for micro-actuators. See "HF bath for SiO2 and glass wet etching" video from 0:10 to 1:20 for detailed explanations.

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Answers are displayed within the problem