

## Application Note: CAL021209\_1

### 区分单/多晶硅层与硅基底的蚀刻流程

## Staining Method to Identify the Interface between Silicon Epi/Poly Silicon and Silicon Substrate

### 1. 准备工作 (Preparation)

原料 (Materials Required) : 去离子水, (DI Water (H<sub>2</sub>O)), 丙酮, (Acetone (CH<sub>3</sub>COCH<sub>3</sub>)), 三氧化铬, (Chromium Trioxide (CrO<sub>3</sub>)), 49% 氢氟酸, (49% Hydrogen Fluoride (49% HF))

#### 配制溶液 (Preparing the Solution) :

- (1) 将15克三氧化铬(CrO<sub>3</sub>)加入100毫升去离子水中制得溶液A ; (Dissolve 15 grams of Chromium Trioxide into 100 ml DI water to obtain solution A)
- (2) 量取与溶液A等体积的49% 氢氟酸得溶液B ; (Volume wise, prepare the same amount of 49% Hydrogen Fluoride as solution A to obtain solution B)
- (3) 将溶液 A 与溶液B混合得溶液C ; (Mix solution A and B to get solution C)
- (4) 用去离子水将C溶液稀释20 倍 (1 份体积的C溶液加入19份体积的去离子水) 制得溶液D ; (Dilute solution C using DI water by 20 times (Volume ratio 1:19)),

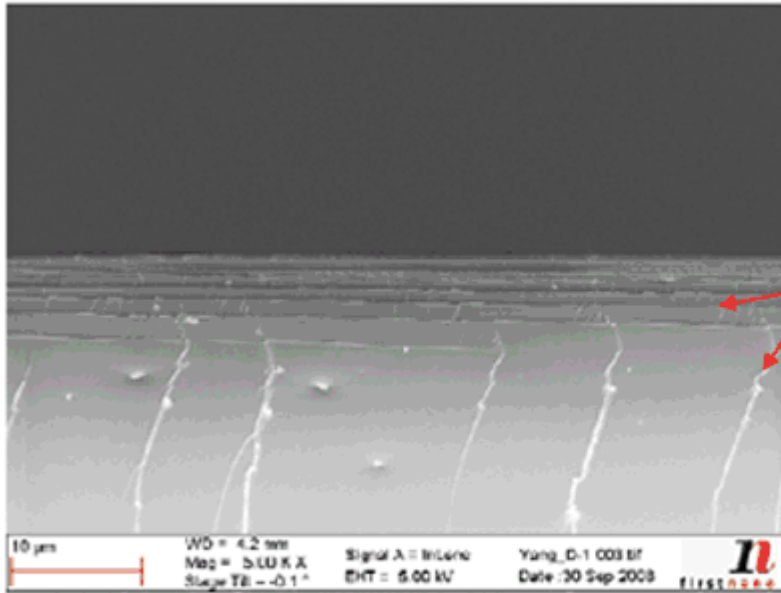
### 2. 具体流程 (Detailed Procedures)

- (1) 将样品放入去离子水中浸泡2分钟 ; (Soak the sample in DI water for 2 minutes)
- (2) 取出样品, 并将其放入丙酮中浸泡2分钟 ; (Take the sample out and soak it in acetone for another 2 minutes)
- (3) 将样品从丙酮中取出, 用去离子水冲洗后, 浸泡在去离子水中1分钟 ; (Take the sample out from acetone, and soak it in DI water for 1 minute)
- (4) 将样品从去离子水中取出, 放入D 溶液浸泡10至15分钟 ; (Take the sample out from DI water and put it into solution D for 10 to 15 minutes)
- (5) 将浸泡后的样品取出, 用去离子水冲洗后在去离子水中浸泡2分钟 ; (Take the sample out, rinse it with DI water and soak it in DI water for 2 minutes)
- (6) 将样品取出, 并用氮气吹干 ; (Pick up the sample and dry the sample with Nitrogen gas)
- (7) 吹干后的样品可以 通过电子显微镜 (SEM) 观察其界面及形貌。 (Sample is ready for SEM imaging)

### 3. 注意事项 (Attention)

- (1) 所有操作应在通风橱内进行, 操作人员应注意防护措施 (防护服, 防护镜, 口罩, 手套) ; (All the operations should be carried out in fume hood. Lab coat, goggle, helmet and gloves are required)
- (2) 本实验中的一切容器皆为塑料或高聚物, 不可以用玻或石英器皿 ; (All the containers used should be either plastics or polymers. Neither glass nor quartz containers are allowed)
- (3) 注意废液处理 (有毒) 。 (Poisonous wastes should be properly disposed)

### 4. 结果比较 (Results)



(a) 未处理样品  
(SEM image for the sample before staining)



(b) 依照上述流程处理后样品  
(SEM image for the sample after staining)