Deep Silicon Etching using TRION

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Keywords
Deep Silicon Etch TRION

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Deep Silicon Etching using TRION (Graduate Student Fellow Program)

Prepared by Zisong Nie (5/5/2015)

**Power (RIE power) dependence of etching profile**

- Gas: O₂ = 5 sccm, SF₆ = 25 sccm
- Pressure: 50mTorr
- ICP power = 500w

![Images showing etching profiles at different powers: 100w (<90°) round corner, 200w (<90°) round corner, 300w (>90°, undercut)]

<table>
<thead>
<tr>
<th>Power (W)</th>
<th>Etching Profile</th>
<th>Rate (μm/min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100w</td>
<td>(&lt;90°) round corner</td>
<td>2.03</td>
</tr>
<tr>
<td>200w</td>
<td>(&lt;90°) round corner</td>
<td>3.24</td>
</tr>
<tr>
<td>300w</td>
<td>(&gt;90°, undercut)</td>
<td>3</td>
</tr>
</tbody>
</table>

RIE Power = 200W, Pressure decreased to 20mTorr

Result: 1. Still round corner. 2. Side wall angle decreased a little bit