EBL Guidelines (Conditions that affect exposure results)

To optimize resolution (smaller patterns):

- Resist thickness: **Thin**
- Beam current: **Small**
- Exposure field: **Small**
- Load substrate/wafer into system at least 30 minutes ahead of starting exposure to ensure temperature and environmental stabilization
- If beam current is changed, allow system to settle at the new beam current for one hour before starting exposure

To optimize speed (shorter exposure times):

- Resist sensitivity: **High**
- Beam current: **Large**
- Beam overlapping: **Small (low pixel count)**
- Exposure field: **Large**

Stitching and Overlay Errors

<table>
<thead>
<tr>
<th>Field Size</th>
<th>Stitching Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>75 um</td>
<td>&lt; 10 nm</td>
</tr>
<tr>
<td>150 um</td>
<td>&lt; 20 nm</td>
</tr>
<tr>
<td>300 um</td>
<td>&lt; 30 nm</td>
</tr>
<tr>
<td>600 um</td>
<td>&lt; 50 nm</td>
</tr>
<tr>
<td>1.2 mm</td>
<td>&lt; 150 nm (not recommended for small features)</td>
</tr>
</tbody>
</table>

*Note: The 2.4mm field size is not available for our system it appears as a choice in the settings

Overlay error: < 30 nm (independent of field size)

General Rules for Pattern Layout

- For target features sizes < 30nm:
  
  Use line or dot layout tool elements for features and then adjust exposure settings to give desired linewidth. (e.g., draw a line, and then over-expose to get a rectangle of the desired dimension)

- For target feature sizes > 30nm:
  
  Use the area layout elements (rectangle, etc) to draw features. Adjust exposure to get desired final dimension (e.g., draw a 30nm rectangle and overexpose to result in a 50nm rectangle).

EBL (Elionix) Guidelines

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