APPLICATION NOTE

SIMS Detection Limits of Selected Elements in ZnO
Under Normal Depth Profiling Conditions

<table>
<thead>
<tr>
<th>Element</th>
<th>DL (atoms/cm³)</th>
<th>Element</th>
<th>DL (atoms/cm³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>1E+14</td>
<td>H</td>
<td>2E+17</td>
</tr>
<tr>
<td>Mg</td>
<td>5E+13</td>
<td>C</td>
<td>1E+16</td>
</tr>
<tr>
<td>Al</td>
<td>5E+13</td>
<td>N</td>
<td>2E+16</td>
</tr>
<tr>
<td>K</td>
<td>1E+13</td>
<td>F</td>
<td>5E+15</td>
</tr>
<tr>
<td>Ti</td>
<td>1E+14</td>
<td>Si</td>
<td>1E+17</td>
</tr>
<tr>
<td>Cr</td>
<td>5E+14</td>
<td>P</td>
<td>2E+15</td>
</tr>
<tr>
<td>Fe</td>
<td>5E+14</td>
<td>As</td>
<td>1E+16</td>
</tr>
<tr>
<td>Ni</td>
<td>1E+15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cu</td>
<td>1E+15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ga</td>
<td>5E+14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In</td>
<td>1E+15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cd</td>
<td>5E+16</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Overlay of two separate SIMS profiles of an arsenic implant in ZnO. Excellent reproducibility is demonstrated in this example as well as the count-rate-limited detection limits of approximately 1e16 at/cm³.

Overlay of multiple species in a single SIMS profile for a ZnO sample containing implants of Ti, Cr, Ni and Cu.