1. Lattice constants and symmetries obtained from the least-square fitting analyses for the thin films grown in Ar and Ar/O₂ mixed ambients are summarized in the table.

<table>
<thead>
<tr>
<th>samples</th>
<th>a (nm)</th>
<th>b (nm)</th>
<th>c (nm)</th>
<th>symmetry</th>
<th>chemical formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ar</td>
<td>0.498</td>
<td>0.498</td>
<td>1.404</td>
<td>Rhombohedral</td>
<td>V₂O₃</td>
</tr>
<tr>
<td>Ar/O₂</td>
<td>1.152</td>
<td>0.357</td>
<td>0.437</td>
<td>Orthorhombic</td>
<td>V₂O₅</td>
</tr>
</tbody>
</table>
2. (a) AFM image of the V$_2$O$_3$ thin film. (b) AFM image of the V$_2$O$_5$ film. The root-mean-square (RMS) surface roughness of the V$_2$O$_3$ film was approximately 18 nm. RMS surface roughness of the V$_2$O$_5$ film was 3.33 nm.
3. XPS analyses of the V$_2$O$_3$ and V$_2$O$_5$ films: (a) V$2p_{3/2}$ spectrum of the V$_2$O$_3$ film. (b) O$1s$ spectrum of the V$_2$O$_3$ film. (c) V$2p_{3/2}$ spectrum of the V$_2$O$_5$ film. (d) O$1s$ spectrum of the V$_2$O$_5$ film.