The Scienta Omicron ARPES Lab is the ideal system to combine with a turnkey UV-X 11 eV laser. The availability of this cutting edge, field proven photon source is possible through a collaboration with Oxide Corporation of Japan and gives scientists the opportunity to add this technology as part of a new ARPES Lab system or as an upgrade to an existing ARPES set-up.

The UV-X series of pulsed vacuum-ultraviolet lasers have been designed for laboratory-based, high-resolution ARPES. UV-2 sources, with high timing resolution, sub-50 psec pulse length, and external triggering capability, are recommended for time-of-flight (TOF) based electron detection methods such as the ARTOF-2. UV-3 sources have been optimized for 50 MHz pulse repetition rate operation, in order to minimize space-charging effects in systems with hemispherical DA30-L analysers.

The 11 eV laser together with the Scienta Omicron ARPES Lab and its low vibration cryo-manipulator combine to create a powerful scientific tool which provides a solution not previously available to bridge the gap between traditional laser based, small momentum coverage ARPES and large momentum coverage synchrotron based ARPES.

The Prof. Xingjiang Zhou group at the Institute of Physics, Beijing has developed an ARPES set-up based on the Scienta Omicron ARTOF 10k analyser and the 11eV UV-2 laser. The system performs at better than 1 meV energy resolution and 0.1° angular resolution. An advantage of the 11 eV photon source is that it allows reaching a large part of the Brillouin zone with high resolution. Together with the ARTOF 10k analyser, or the DA30-L, it can cover nearly half a quadrant ensuring that all data is taken under the same experimental conditions.

UV-2 and UV-3
11 eV turnkey laser systems:
- 50 MHz version optimized for DA30-L
- 0.5- 5 MHz version optimized for ARTOF-2
- Pulse Bandwidth: <0.1 meV
- Variable flux and polarization
- Beam diameter down to 20 µm

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**Technical Data**

<table>
<thead>
<tr>
<th>Property</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output Wavelength</td>
<td>113.785 nm (10.897 eV)</td>
</tr>
<tr>
<td>Average Power</td>
<td>&gt; 10 µW</td>
</tr>
<tr>
<td>Pulse Bandwidth</td>
<td>&lt; 0.1 meV (0.001 nm)</td>
</tr>
<tr>
<td>Polarization</td>
<td>Linear (Horizontal)</td>
</tr>
<tr>
<td>Beam diameter</td>
<td>&lt;0.25 mm without focusing option</td>
</tr>
<tr>
<td>UV-3 (optimized for DA30-L):</td>
<td></td>
</tr>
<tr>
<td>Repetition Rate</td>
<td>50 MHz</td>
</tr>
<tr>
<td>Pulse Duration</td>
<td>&lt; 20 psec</td>
</tr>
<tr>
<td>UV-2 (optimized for ARTOF-2):</td>
<td></td>
</tr>
<tr>
<td>Repetition Rate</td>
<td>0.5-5 MHz</td>
</tr>
<tr>
<td>Pulse Duration</td>
<td>&lt; 50 psec</td>
</tr>
</tbody>
</table>

The system may be configured to direct 11 eV light in three different directions to fit specific lab space requirements.

**Options:**
- Polarization: Full range of linear polarizations as well as right and left-handed circular polarizations.
- Focus enhancement: Beam diameter reduced to < 20 um
- Attenuation control: Between 0 – 100 % of maximum
- Accessory hardware package to adapt UV-3 laser to UHV PES system including customized beam tubing, UHV LF window assembly, Flux Detector, purge gas filter, and more.

**Note:** The UV-X is a class 1 laser system in normal operation when all system enclosures and beam tubes are in place.

**Touch Screen Control Functions**
1. Enable/Disable laser, open/close shutter
2. Optical harmonic power monitors
3. Motorized 11 eV beam pointing
4. 11 eV linear polarization rotation (optional)
5. 11 eV flux attenuation (optional)

**Features and Safety Interlocks (Class 4 laser system)**
1. Low jitter (10 psec) pulse synchronization electrical trigger
2. On/Off Key switch
3. Emergency Power Off (EPO) switch
4. Integrated laser shutter, with remote control capability
5. Two short-to-operate user interlocks on separate circuits
6. Remote monitoring of laser status, and shutter control

**How to contact us:**
www.ScientaOmicron.com
info@ScientaOmicron.com

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