NON-CLINICAL LASER LABORATORY AUTHORIZATION – (Required for Class 3b & 4 laser use)
Contact Duke Laser Safety (668-3157) for assistance or if questions arise regarding the information required on this form.

I. Principal Laser User: Glenn Edwards, Ph.D. Phone: 660-2674 E-mail: edwards@fel.duke.edu

II. Laser Laboratory Location(s): Building: DFELL Room(s): Keck Hall; Keck 2nd Fl (217A&B); LINAC, Rm 141; FEL beam ports

III. Lasers (list on back side of this sheet if more space is needed)

<table>
<thead>
<tr>
<th>DLS Inv.</th>
<th>Manufacturer</th>
<th>Model</th>
<th>Type (media)</th>
<th>Class</th>
<th>Wavelength(s)</th>
<th>Output</th>
<th>Min.OD</th>
<th>User's Manual?</th>
<th>Beam Stop?</th>
</tr>
</thead>
<tbody>
<tr>
<td>99 - 217A</td>
<td>Omnichrome</td>
<td>643-YB-A01</td>
<td>Ar</td>
<td>3b</td>
<td>457-514 nm</td>
<td>0.1 W</td>
<td>2</td>
<td>N/A – Enclosed Beam Path</td>
<td></td>
</tr>
<tr>
<td>101 - 217B</td>
<td>Spectra-Physics</td>
<td>3941-MIS</td>
<td>Ti:Sapphire</td>
<td>4</td>
<td>900 nm</td>
<td>0.5 W</td>
<td>2.7</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>102 - 217B</td>
<td>Spectra-Physics</td>
<td>Millenia</td>
<td>KTP/Nd:YAG</td>
<td>4</td>
<td>532 nm</td>
<td>15 W</td>
<td>4.2</td>
<td>N/A – Enclosed Beam Path</td>
<td></td>
</tr>
<tr>
<td>216 - KH</td>
<td>Coherent</td>
<td>Verdi</td>
<td>Nd:YVO4</td>
<td>4</td>
<td>532 nm</td>
<td>5 W</td>
<td>3.7</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>249 - 217A &amp; KH</td>
<td>Uniphase</td>
<td>1125P</td>
<td>HeNe</td>
<td>3b</td>
<td>633 nm</td>
<td>0.01 W</td>
<td>1.0</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>247 - KH</td>
<td>Continuum</td>
<td>Minilite II</td>
<td>Nd:YAG</td>
<td>4</td>
<td>1064 nm</td>
<td>0.75 W</td>
<td>4.9</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>532 nm</td>
<td>0.37 W</td>
<td>5.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>355 nm</td>
<td>0.12 W</td>
<td>4.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>266 nm</td>
<td>0.06 W</td>
<td>6.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>145-163</td>
<td>DFELL</td>
<td>FEL</td>
<td>beam ports</td>
<td>4</td>
<td>To be characterized upon full operation (~Spring ’07)</td>
<td>N/A; none available</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

IV. Protective Eyewear

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Model</th>
<th>Marked wavelength/OD</th>
<th>No. pairs</th>
<th>Storage location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trinity</td>
<td></td>
<td>6+@190-540 nm; 3+@850-900 nm; 4+@900-950 nm; 5+@950-1000 nm; 7+@1000-1600 nm; 5+@1600-2400 nm; 5+@2940, 10600 nm</td>
<td>2</td>
<td>Keck Hall, 217AB LINAC entrance</td>
</tr>
<tr>
<td>GPT/LOTG</td>
<td>Argon/KTP</td>
<td>7@190-532 nm; 5@106000 nm</td>
<td>4</td>
<td>Keck Hall, 217AB</td>
</tr>
<tr>
<td>Allsafe</td>
<td>Broad Spectrum</td>
<td>4.1@1064nm; 4.5@840nm; 4.2@532nm; &gt;5@514, 488, 200-400nm</td>
<td></td>
<td>217A&amp;B</td>
</tr>
<tr>
<td>Laser-Gard</td>
<td>Argon</td>
<td>&gt;7@5,000-11,000 nm; &gt;4.5@520-532nm; &gt;9@190-520nm</td>
<td>1</td>
<td>Keck Hall</td>
</tr>
</tbody>
</table>

V. Written safety/alignment procedure completed? – 217A&B and Keck Hall done; LINAC tunnel & FEL beam lines in process

VI. Entryway Controls

| ANSI-Spec laser warning signs posted at each entrance? | Yes |
| Lighted "Laser On" indicator outside lab entrances, tied directly to laser operation? | No – under development |
| Barrier, screen, or curtained enclosure (non-combustible for Class 4) inside each entrance to laser lab? | Yes |
| Provisions for preventing accidental laser exposure in case of inadvertent or unauthorized entry? | Administrative; developing engineered (automated) controls |
### VII. Authorized Personnel

<table>
<thead>
<tr>
<th>Name</th>
<th>LS Training Date</th>
<th>SOPread/signed</th>
<th>Name</th>
<th>LS Training Date</th>
<th>SOPread/signed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blackwood, Shannon</td>
<td>N/A- no access to laser areas</td>
<td></td>
<td>Patterson, Janet</td>
<td>6/1/2005</td>
<td>In process</td>
</tr>
<tr>
<td>Busch, Matthew</td>
<td>6/1/2005</td>
<td>In process</td>
<td>Pentico, Maurice</td>
<td>6/1/2005</td>
<td>In process</td>
</tr>
<tr>
<td>Emamian, Mark</td>
<td>6/1/2005</td>
<td>In process</td>
<td>Popov, Victor</td>
<td>6/1/2005</td>
<td>In process</td>
</tr>
<tr>
<td>Fairoloth, Joe</td>
<td>6/1/2005</td>
<td>In process</td>
<td>Rathbone, Vernon</td>
<td>6/1/2005</td>
<td>In process</td>
</tr>
<tr>
<td>Gamble, Denise</td>
<td>6/1/2005</td>
<td>In process</td>
<td>Sun, Changchun</td>
<td>6/1/2005</td>
<td>In process</td>
</tr>
<tr>
<td>Garguiolo, Jacob</td>
<td>8/14/06</td>
<td>In process</td>
<td>Swift, Gary</td>
<td>6/1/2005</td>
<td>In process</td>
</tr>
<tr>
<td>Hartman, Steven</td>
<td>6/1/2005</td>
<td>In process</td>
<td>Wallace, Patrick</td>
<td>6/1/2006</td>
<td>In process</td>
</tr>
<tr>
<td>Huang, Senlin</td>
<td>6/1/2006</td>
<td>In process</td>
<td>Wang, Ping</td>
<td>6/1/2005</td>
<td>In process</td>
</tr>
<tr>
<td>Jia, Botao</td>
<td>6/1/2005</td>
<td>In process</td>
<td>Wu, Wenzhong</td>
<td>6/1/2005</td>
<td>In process</td>
</tr>
<tr>
<td>Johnson, Doglas (Marty)</td>
<td>6/1/2005</td>
<td>In process</td>
<td>Wu, Ying</td>
<td>6/1/2006</td>
<td>In process</td>
</tr>
<tr>
<td>Kim, Yoo</td>
<td>6/1/2006</td>
<td>In process</td>
<td>Ingram, Peter</td>
<td>N/A- no access to laser areas</td>
<td>In process</td>
</tr>
<tr>
<td>Li, Jingyi</td>
<td>6/1/2005</td>
<td>In process</td>
<td>Scafetta, Nicola</td>
<td>N/A- no access to laser areas</td>
<td>In process</td>
</tr>
<tr>
<td>Mikhailov, Stepan</td>
<td>6/1/2005</td>
<td>In process</td>
<td>Patterson, Janet</td>
<td>6/1/2005</td>
<td>In process</td>
</tr>
<tr>
<td>Oakeley, Owen</td>
<td>6/1/2005</td>
<td>In process</td>
<td>Zeman, Matthew</td>
<td>8/7/06</td>
<td>In process</td>
</tr>
</tbody>
</table>

### VIII. Signatures certifying Laboratory meets minimum standards for safe laser operation:

Principal Laser User/Date: [Signature]

OESO-Radiation Safety/Date: Ben Edwards 30-Nov-06