Green chemistry approaches are of growing importance to industry as companies work to both meet government regulations and increase profit by reducing waste. However, in our crowded chemistry lecture courses, there is no time to introduce and review these concepts without sacrificing traditional content. Organic lab sections afford the opportunity to introduce the twelve goals of green chemistry, which suggest significant improvements to existing chemical laboratory practices.\(^1\) Published experiments from the *Journal of Chemical Education* were adopted in lab during the 2012 semester to reduced solvent use, address atom economy issues, and use more environmentally-friendly or renewable reagents.


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### Organic Chemistry II Laboratory Schedule

**Fall 2012 Chm223L**

All procedures should be downloaded from Sakai in time to prepare for the experiments.

<table>
<thead>
<tr>
<th>Lab Dates</th>
<th>Lab #</th>
<th>Experiment Title</th>
<th>Background</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/31-9/6</td>
<td>Lab 1</td>
<td><strong>Synthesis of Nitrotyrosine</strong></td>
<td>McMurry 8\textsuperscript{th} ed p546-572</td>
</tr>
<tr>
<td>9/7-9/13</td>
<td>Lab 2</td>
<td><strong>Synthesis of Malachite Green and Crystal Violet Dyes via the Grignard Reaction</strong></td>
<td>McMurry 8\textsuperscript{th} ed p635-637</td>
</tr>
<tr>
<td>9/14-9/20</td>
<td>Lab 3</td>
<td>Sodium Borohydride Reduction of Camphor</td>
<td>McMurry 8\textsuperscript{th} ed p630-631</td>
</tr>
<tr>
<td>9/21-9/27</td>
<td>Lab 4</td>
<td><strong>pH Sensitive Oxidation of an Aromatic Ketone</strong></td>
<td>McMurry 8\textsuperscript{th} ed p728</td>
</tr>
<tr>
<td>9/28-10/4</td>
<td>Lab 5</td>
<td><strong>Preparation &amp; Analysis of Biodiesel</strong></td>
<td>McMurry 8\textsuperscript{th} ed p678-680</td>
</tr>
<tr>
<td>10/5-10/11</td>
<td>Lab 6</td>
<td><strong>Lab Midterm</strong></td>
<td>--</td>
</tr>
<tr>
<td>10/12-10/18</td>
<td>Lab 7</td>
<td><strong>Unknown 1 Report Due</strong></td>
<td>McMurry 8\textsuperscript{th} ed p885-886</td>
</tr>
<tr>
<td>10/23-10/26</td>
<td>Lab 8</td>
<td><strong>Preparation of Azo Dyes</strong></td>
<td>McMurry 8\textsuperscript{th} ed p971-972</td>
</tr>
<tr>
<td>10/30-11/2</td>
<td>Lab 9</td>
<td><strong>Reductive Amination</strong></td>
<td>McMurry 8\textsuperscript{th} ed p958-959</td>
</tr>
<tr>
<td>11/6-11/9</td>
<td>Lab 10</td>
<td><strong>Green Combinatorial Synthesis and Assay of Potential Antibiotic Compounds</strong></td>
<td>McMurry 8\textsuperscript{th} ed p741-742</td>
</tr>
<tr>
<td>11/13-11/16</td>
<td>Lab 11</td>
<td><strong>Preparation of Nylon &amp; Plexiglass</strong></td>
<td>McMurry 8\textsuperscript{th} ed p847-849, 1248-1249, 289-293</td>
</tr>
<tr>
<td>11/27-11/30</td>
<td>Lab Final Exam/Clean-Up/Check out</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Comment [AGK-WFU1]: A green electrophilic aromatic addition that combines medicinal interest in nitotyrosine and water as a solvent. This procedure also introduces the concepts of green chemistry to students for the first time in the background information.

Comment [AGK-WFU2]: A green reaction that uses bleach and water as the solvent and oxidizer.

Comment [AGK-WFU3]: Introduces the production of alternative fuels to students.

Comment [AGK-WFU4]: A green synthesis using water as a solvent. Also done on a reduced scale.

Comment [AGK-WFU5]: Uses a solid resin catalyst that can be recycled.

Comment [AGK-WFU6]: The lab we are most excited about since a large percent of students taking this class are pre-med. It introduces aqueous combinatorial synthesis of potential antibiotic compounds and students will then bioassay the mixtures.