







## Safe Work Procedure

<b>Process/Equipment:</b> Microwave Assisted Organic Synthesis		<b>Location :</b> Chemistry Department	
<b>Procedure Developed by :</b> Dr Jody Morgan		<b>Approved by :</b> William Price (HOD)	<b>Date :</b> 14/07/2005
<b>Referenced UOW Guidelines, legislation, codes of practice, Australian Standards etc:</b>		UOW Working with hazardous substances guidelines (OHS114.2) UOW Laboratory safety guidelines (OHS048.2) OH&S Regulation 2001 Clause 62 (Fire and explosion) OH&S Regulation 2001 Clause 161-174 (Use of hazardous substances) AS2242.2 (1997) Laboratory safety – Chemical aspects AS2243.8 (2001) Laboratory safety – Fume cupboards AS60335.2.25 (1989) VDU radiation – Microwave radiation	
<b>Personal Protective Equipment Required:</b>			
   			
<b>Activity</b> <i>(Steps in the process/task)</i>	<b>Hazards Identified</b> <i>(What could cause an injury)</i>	<b>Risk Score</b> <i>(How harmful is it)</i>	<b>Controls</b> <i>(What can be done to minimise the risk of injury)</i>
Preparation of Reaction	Hazards are dependant upon the chemicals and solvents being used in the reaction. Some possible hazards are listed below: <ul style="list-style-type: none"> <li>– Fire</li> <li>– Skin irritation</li> <li>– Harmful if swallowed</li> <li>– Eye irritation</li> <li>– Respiratory system irritation</li> <li>– Burns</li> </ul>	High	Prepare reaction in a well ventilated area (fume cupboard) Keep away from sources of ignition PPE: safety footwear, gloves, eyewear, protective clothing
Microwave Reaction	Explosion Fire Exposure to microwave radiation	High	Ensure reaction has been previously performed at reflux in a round bottom and under sealed tube conditions Check reaction vessel is without cracks or fractures and contains no residual material Ensure no solid material remains on the walls of the flask

<b>Process/Equipment:</b> Microwave Assisted Organic Synthesis		<b>Location :</b> Chemistry Department	
<b>Procedure Developed by :</b> Dr Jody Morgan		<b>Approved by :</b> William Price (HOD)	<b>Date :</b> 14/07/2005
			<p>Ensure addition of suitable stirrer bar (dependant on solvent polarity)</p> <p>Ensure reaction vessel is purged with inert gas (preferably argon)</p> <p>Check the physical integrity of the microwave</p> <p>Ensure the vessel is sealed correctly (with torque wrench)</p> <p>Ensure the temperature probe is not damaged and is carefully inserted into the reaction vessel (the solvent volume must be at least 8 mls in a standard size reaction vessel)</p> <p>Ensure that if stirring is required the stirrer is set to "ON"</p> <p>Ensure that a significant time period has been allowed for cooling of the reaction</p> <p>Do not stand in front of the microwave reactor whilst it is on</p> <p>Monitor the reaction closely with respect temperature and stop the reaction if it appears to be deviating significantly from the profile</p> <p>PPE: safety footwear, gloves, eyewear, protective clothing</p>
Reaction completion and Clean-up	<p>Hazards are dependant upon the chemicals and solvents being used in the reaction. Some possible hazards are listed below:</p> <ul style="list-style-type: none"> <li>- Fire</li> <li>- Skin irritation</li> <li>- Harmful if swallowed</li> <li>- Eye irritation</li> <li>- Respiratory system irritation</li> <li>- Burns</li> </ul>	High	<p>Do not open reaction vessels until they are at room temperature</p> <p>Open the reaction vessel in a well ventilated area (fume cupboard)</p> <p>Keep away from sources of ignition</p> <p>PPE: safety footwear, gloves, eyewear, protective clothing</p>