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| **Brueckner Lab-Specific Standard Operating Procedure (LSOP) Agilent 1100 High-Performance Liquid Chromatograph** | |
| **Principal Investigator (PI):** Christian Brueckner | |
| **Building:** Chemistry | **Lab(s) Covered by LSOP:** R413/R415 |
| **Department:** Chemistry | **Lab Phone Number(s):** 6-6596/6-6598 |
| **SECTION 1 – HAZARDOUS CHEMICAL(S) or PROCESS(ES) and HAZARDS INVOLVED** | |
| * Electrical instrument – electrocution risk * Aqueous solvent safety risks:   + Respiratory irritants; corrosive to skin and eyes * Chlorinated solvent safety risks:   + Skin, eye, and respiratory irritants; carcinogenic; flammable; toxic * Ester/Ketone/Aldehyde solvent safety risks:   + Skin, eye, and respiratory irritants; flammable; toxic * Alcohol/Glycol/Ether solvent safety risks:   + Low flash points; explosive; flammable; skin, eye, and respiratory irritants * Aliphatic solvent safety risks   + Skin, eye, and respiratory irritants; may damage nervous system; flammable; flash fires and explosions * Pressurized liquids can cause physical eye damage if hit by a high-pressure stream | |
| **SECTION 2 – ADMINISTRATIVE CONTROLS** | |
| List the administrative controls in place to limit exposure:   * Anyone using the chemicals and procedures described herein needs to have undergone the annual EH&S Chemical Hygiene Training: <http://www.ehs.uconn.edu/Chemical/?p=training> * Anyone using the chemicals and procedures described herein need to be aware of the applicable safety data sheets (MSDS)? * [Working Alone](http://policy.uconn.edu/2012/07/30/working-alone-policy/) is not permitted when using chemicals or processes described in the LSOP. * The Agilent 1100 Series is programed to automatically stop if a problem is encountered; however the user should also be weary of the following to prevent possible damage to the machine/lab:   + Leaks   + Pressures exceeding 200 bar   + Waste tubing directed into a waste container to avoid floods   + Components of HPLC not working in unison   + Check waste containers to prevent overflow – empty waste containers regularly * An eyewash station should be in the vicinity of the HPLC | |
| **SECTION 3- ENGINEERING CONTROLS** | |
| Assure all electrical cords are in impeccable conditionsAssure that all fitting are compatible with inlets they are connected to.Tightly affix fittings to their corresponding inlets to reduce the risk of leaks.Tightly screw the lids of all reservoir solvents to prevent solvent vapor from entering the lab.Do not allow the pressure within the system to exceed 400 bar as high pressures can lead to leaks.The waste container should be placed within a secondary container. | |
| **SECTION 4 – WORK PRACTICES** | |
| Be familiar with the solvents you are planning to use.Samples should be filtered through a microsyringe filter prior to injection to prevent clogging of the machine  * All HPLC solvents should be filtered before stored in the reservoir to prevent clogging of the machine  All HPLC detectors must be on for a minimum of 15 minutes before use as to allow for proper heating of the lamps.All solvent lines must be free of bubbles prior to usage.Prior to each run, the HPLC system should be washed for a minimum of 5 min with the initial solvent composition of the upcoming run.All fittings must be compatible with corresponding inlets, failure to comply will results in leaks.All solvents stored on the solvent reservoir must be labeled regardless of whether the solvent is in use. | |
| **SECTION 5 – PERSONAL PROTECTIVE EQUIPMENT (PPE)** | |
| * At a minimum, a lab coat, nitrile gloves, long pants, closed-toed footwear, and chemical safety glasses that meet ANSI standard Z-87.1 must be worn. | |
| **SECTION 6 – STORAGE** | |
| The HPLC is located on a cart that was designed to be moved between labs. To move apparatus, merely unplug the two power strips from the wall outlets and remove the Ethernet cables from the Netgear Ethernet hub. Make sure all solvent bottles are well secured before moving. | |
| **SECTION 7 – SPILL AND ACCIDENT PROCEDURES** | |
| * Any solvent spill should be handled in the manner outlined in that chemicals safety data sheet or chemical hygiene plan. * In general, all affected areas should be rinsed under cold water for a minimum of 15 minutes * Contaminated clothing should be immediately removed to prevent prolonged exposure to irritant. * In case of spills of large quantities of solvent (>500 mL), evacuate the lab and consider your next move (911 or waiting until the solvent has evaporated, or a clean-up procedure, depending on the hazards the solvent poses * Turn off all sources of ignition – push the red emergency shut-off button near the exit.   **Report any incident to the PI and fill out the** [**accident form**](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0ahUKEwiF3bPe1dPXAhVRRN8KHX4wDf4QFggmMAA&url=https%3A%2F%2Fchemistry.uconn.edu%2Fwp-content%2Fuploads%2Fsites%2F1259%2F2015%2F09%2FIncident-Report-Form.doc&usg=AOvVaw3Uov8IQ2Z-Kan) | |
| **SECTION 8 – FIRST AID PROCEDURES** | |
| * First Aid should be administered in a manner consistent with the spilled chemical’s safety data sheet. * In general, all affected areas should be rinsed under cold water for a minimum of 15 minutes.   **Report any incident to the PI and fill out the** [**accident form**](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0ahUKEwiF3bPe1dPXAhVRRN8KHX4wDf4QFggmMAA&url=https%3A%2F%2Fchemistry.uconn.edu%2Fwp-content%2Fuploads%2Fsites%2F1259%2F2015%2F09%2FIncident-Report-Form.doc&usg=AOvVaw3Uov8IQ2Z-Kan) | |

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| **SECTION 9 – WASTE MANAGEMENT** | |
| * A waste container should be situated beneath the HPLC, inside of a secondary waste container. * All waste must be labeled with “Hazardous Waste” stickers or tags, use full chemical names to describe the waste (i.e., no chemical abbreviations or symbols), be stored in sturdy containers with tight-fitting caps or lids, and be stored alone or with other compatible chemicals * Hazardous wastes must be stored at or near a green “Satellite Accumulation Area” sign prior to disposal by EHS. Once the containers are 80% filled, fill our EH&S chemical [waste pickup form](http://ehs.uconn.edu/Regulated%20Waste%20Management/index.php) * The [Chemical Waste Disposal Manual](http://ehs.uconn.edu/Chemical/ChemWasteDisp.pdf) must be used as a reference |

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| **SECTION 10 – DECONTAMINATION PROCEDURES** |

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| * Following use, the HPLC should be rinsed with several column volumes of hexane. * Hands should be thoroughly washed following HPLC use. |

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| **SECTION 11 – SPECIFIC PROCEDURE** |

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| The following link included details instructions on how to operate Agilent 1100/1200 Series HPLCs and work with the Chemstation program:  <https://borch.agsci.colostate.edu/files/2016/02/HPLC-SOP-2.pdf> |

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| **SECTION 12A. APPROVAL** | | | |
| I have reviewed, understand and agree to follow this lab-specific standard operating procedure (LSOP) for the use of the HPLC*.* Failure to follow this LSOP or lab-specific training guidelines is a violation of the [*University Health & Safety Policy*](http://policy.uconn.edu/2011/05/19/health-and-safety-policy/) and [*University Code of Conduct*](http://policy.uconn.edu/2011/05/17/employee-code-of-conduct/).  Further approval and/or review of this LSOP by the PI/Supervisor is required if any of the following events occur:   * A significant change in amount (i.e., doubling of the scale of reaction) or substitution of the chemicals in the procedure is planned * A major change in the agreed-upon experimental set-up is planned (heating instead of room temp, etc.) * Any signs of a failure in safety design or equipment are observed * Any signs or symptoms of a chemical exposure to any personnel are observed * Unexpected and/or potentially dangerous experimental results occur (e.g., fire, uncontrolled buildup of heat and/or pressure, etc.) | | | |
| **Researcher Name/Signature** | **Trainer Name/Signature** | **Training Date** | |
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| **SECTION 12B. PRINCIPAL INVESTIGATOR CERTIFICATION** | | | |
| I approve the contents of the lab-specific standard operating procedure listed above. | | | |
| **PI Signature:** | | | **Date:** |
| **A HARD OR ELECTRONIC COPY (https://bruckner.research.uconn.edu/safety-resources/) OF EACH LAB-SPECIFIC STANDARD OPERATING PROCEDURE MUST BE READILY AVAILBALE IN THE LAB.** | | | |