

University of Waterloo Mass Spectrometry Facility (UWMSF)

Agilent 5975B MSD Standard Operating Procedure (SOP)

READ & UNDERSTAND THE ENTIRE SOP BEFORE BEGINNING

Note: An SOP cannot cover all the needed information for proper instrument understanding and operation, or cover all scenarios; nor can an SOP eliminate the necessity of awareness, attention to details and most importantly using your training to allow successful completion of your project. Background information regarding ionization methods, ion separation, techniques and concepts as well as tips and tricks can be found on the UWMSF website:

<https://uwaterloo.ca/mass-spectrometry-facility/ms-tutorials-and-sops>

Remember, the training you have received and the detailed protocol you have developed and documented will provide the guidance necessary to allow you to complete a successful sample analysis or project using this sophisticated instrument. Please refer to the instrument manuals for other background information, review literature, and always remember your training. When

Name	Agilent 5975B MSD GC/MS
Description	Single quad GC/MS system
Location	C2-268
SOP created	April 20 th , 2024
SOP author	Richard W. Smith
SOP revised	January 3 rd , 2025
SOP revised by	Dr. Yiming Xiao
SOP Location	C2-267
User Manual	On desktop of data system
Equipment owner	UWMSF
Authorized Trainers	Dr. Yiming Xiao (YX) and Dr. Josh Featherstone (JF)
Authorized Users	Users who have completed the UWMSF Training Certification and all other relevant UW specified safety training



in doubt always ask Facility personnel before trying something outside of your training or prepared protocol.

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Significant Hazards	High Voltage (up to 5kV AC/DC) and high temperatures (up to 350°C) are present in source, transfer line, GC oven and internal instrument components and power supplies.
Administrative Controls	Can be used independently by users who have satisfied all training requirements described above. Other users must be accompanied by an authorized trainer. Instrument panels and interlocks should never be removed by users only by YX or JF when deemed necessary by YX or JF.
Engineering Controls	Instrument is fitted with a protective housing and interlocks that prevent contact with high voltage/temperature components
PPE Required	Gloves, eye protection, lab coats and closed toe shoes when appropriate
Relevant MSDS	See chemical inventory binder for relevant MSDS's

Accident Procedure	Report immediately to YX and/or Valerie JF. Follow all posted procedures in the laboratory.
Emergency Shutdown Procedure	In cases where the instrument behaves or sounds abnormal, report immediately to YX and/or JF. If not available, please read the shutdown procedure located next to the instrument. Only perform this operation under extreme conditions!

Pre-start Checklist	
- You can book instrument time by emailing YX or JF and requesting a time slot. You can view instrument schedules on the UWMSF website: https://uwaterloo.ca/mass-spectrometry-facility/instrument-schedule - Instrument tuning and calibration can only be performed by authorized trainers (YX or JF) and should never be attempted by users - The instrument is always in standby mode unless a sample injection has been made. - Method, sequence files are used to perform sample analysis. How to build these methods will be part of your training. - If any of these conditions are not met, stop what you are doing and find either YX or JF. - You have a sample introduction method, instrument method, ionization mode and polarity that you want to use.	

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The 5975B can be used in capillary GC/MS mode only and generates nominal mass data from the analysis of complex mixtures or pure compounds that are amenable to GC/MS analysis ie thermally stable and volatile.

1. Sample concentrations to be used, how to load the autosampler and safely use the system will be part of your training.
2. The GC/MS is controlled from the Chemstation software and users will be trained to set-up and use this system for their specific project requirements. As each project would have very different requirements, training will be provided to accomplish that project.
3. Solvents should be volatile solvents such as DCM, acetone, MeOH and a few others but NEVER water.

Maintenance and Repair
• Do not attempt to repair any problems you encounter during your time in the Facility. Typical problems that can arise include plugged sprayer, computer crashes, poor chromatographic performance, poor mass accuracy or precision, vacuum problems etc • It is important that you are able to determine that there is a problem, again your training will help you with this. • If any of these or other situations arise that you don't understand, please find/talk with YX or JF.