



## Services

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### Surface Chemistry and Rheology Facilities

Contact Dr. Maria Holuszko, [meh@mining.ubc.ca](mailto:meh@mining.ubc.ca), Ph: 604-822-5475 or

S. Finora, [smf@mining.ubc.ca](mailto:smf@mining.ubc.ca), Ph: 604-822-4292 Fax: 604-822-5599

Prices available upon request. Contact [services@mining.ubc.ca](mailto:services@mining.ubc.ca)

Service Description	Equipment
<b>Microscopy</b>	
Optical Microscopy with Image Analysis	Olympus BX60 microscope
<b>Particle Size Analysis</b>	
Standard tests for either particle size distribution or particles per ml on water samples using two instruments. Note: there is an extra charge for use of solvents for water-soluble samples on the Mastersizer.	
Laser diffraction method, from 20 nm to 500 µm	Malvern Mastersizer 2000 Laser Diffraction Particle Size Analyser
Instrument used by outside customers, training and/or initial setup	
Particle size Distribution of water samples, from ~1.2 – 200 µm or Particle counts per ml over ~1.2 – 25 µm	Micromeritics Elzone 280PC
<b>Zeta Potential and Electrophoretic Mobility</b>	
Concentrated suspensions and emulsions	Zeta Probe
Dilute suspensions	Zeta Meter 3.0+
<b>Surface Tension Determination</b>	
Du Nouy Ring Tensiometer	du Nouy Ring
Bubble pressure	Sensadyne PC 500-L

Contact Angle & Surface Tension Determination	FTA Contact Angle Goniometer with specialized software.
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<b>Bubble Testing</b>	
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Testing attachment time of bubbles to minerals	Induction Time Meter
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<b>Surface Area Analysis and Porosity by The BET Method</b>	
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multi-point determination of surface area	Quantachrome Autosorb
Micropore, adsorption studies	

<b>Spectrophotometry</b>	
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Fourier Transform Infrared Spectrophotometer with attachments for Diffuse Reflectance and ATR	Perkin-Elmer FTIR Spectrum 100 Spectrophotometer
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UV-VIS spectroscopy studies	Cary 50 UV/VIS spectrophotometer
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<b>Viscosity and Rheology</b>	
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Rotational viscometers for suspensions	Haake VT550
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Dynamic rotational viscometer for pastes and solutions (non-settling systems)	Haake RS600
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Capillary viscometer	Cannon-Fenske (Lauda)
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Concentrated polymer solutions	Dynamic Capillary Rheometer (Anton Paar DCR)
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<b>Flotation Testing</b> (small-scale)	Hallimond tubes
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<b>Bubble Testing</b>	
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Testing attachment time of bubbles to minerals	Induction Time Meter
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<b>Wettability Studies</b>	by various methods
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<b>Total organic carbon/nitrogen analyzer</b>	Shimadzu TOC-VCPH and TNM-1 for liquids analysis
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## Bench and Pilot Scale Processing Facilities

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Lab Equipment	
Bench flotation cells	Heavy liquid analysis lab
Crushing laboratory	Low intensity magnetic separator
Electrostatic separator	Cyclosizer
Filtration	Rod, ball mills
Wet/dry high intensity magnetic separators	Screening
Hardgrove Grindability Index Mill	Stirred mill for ultra fine grinding
Gravity concentration (spirals, tables, jigs, centrifugal concentrators, heavy media separators, water-only cyclones)	

## Lab Rental

Lab Rental	
Lab Rental - Coal & Mineral Processing Lab	Rental rate based per person / day
Lab rental - Surface Chemistry Lab facilities	Rental rate based per person / day
Technician costs	Based per hour



UBC GEOMECHANICS RESEARCH GROUP  
ROCK LABORATORY TESTING

Test	Standard	Price	+ 25%*
Unconfined Compressive Strength (UCS)	ATSM D2938	\$200	\$250.00
UCS with Strain Measurements	ISRM 1979	\$450	\$562.50
Brazilian Tensile	ATSM D3967	\$60	\$75.00
Slake Durability	ATSM D4644	\$150	\$187.50
Direct Shear	ATSM D5607	\$550	\$687.50
Specific Gravity	ATSM D6473	\$60	\$75.00
Moisture Content	ATSM D2216	\$20	\$25.00

Notes:

All prices are in Canadian Dollars and GST charges apply.

All prices include costs of reporting.

University of British Columbia (UBC) charges a 25% overhead on all testing conducted on campus.

Pricing for rock testing is for samples that are in core form. If required, coring cost is an additional \$100 per sample

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Please contact Dr. Davide Elmo

delmo@mining.ubc.ca

T: +1 604 822 9304