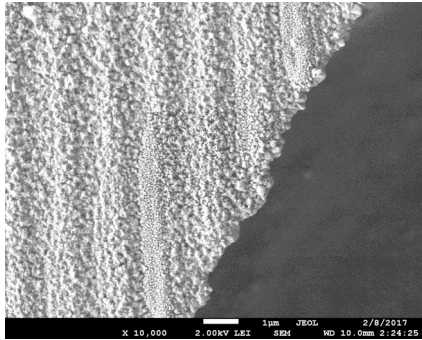


Guess the Sample!

Can you guess the sample in the SEM picture below? Is it:



- a) a potato chip
- b) a butterfly wing
- c) a compact disc (CD)

answer at bottom of page.

Visit our Facebook page at
<https://www.facebook.com/UTSCOPE/>
to play Guess the Sample every week and
see updates about the program!

This is a picture of a compact disc!

All SCOPE Program sessions are absolutely free!
To schedule a session or request more
information, please contact us at:

Phone: 419.530.7847

E-mail: cassandra.pittman@utoledo.edu

or

kristin.kirschbaum@utoledo.edu

Website: www.utoledo.edu/as/ic/instruments/ICenter/S.C.O.P.E_Outreach.html



College of Natural Science and Mathematics

Instrumentation Center

University of Toledo
2801 West Bancroft Street
Toledo, OH 43606

The University of Toledo

College of Natural Science and Mathematics

S.C.O.P.E. Program



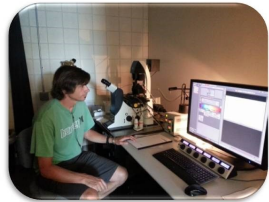
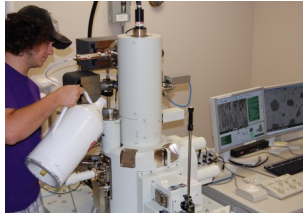
An Instrumentation Center Outreach Program

http://www.utoledo.edu/nsm/ic/instruments/ICenter/S.C.O.P.E_Outreach.html

Instrumentation

Scanning Electron Microscope (SEM)

- Examines morphology of samples
- Determines chemical composition of samples



Confocal Light Microscope

- Examines cellular structures
- Uses fluorescence to highlight organelles

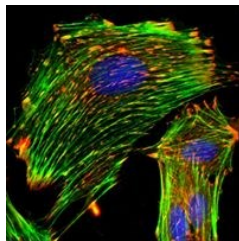
Lesson Plans

*The following lesson plans have been developed to align with the Ohio Science Standards. [*Please note that the following pictures may not be indicative of the quality of pictures taken during a class session]*

Basic Concept: Cells have particular structures related to their function

Instrument: Confocal Light Microscope

Grade levels/classes: Grade 6, High School Biology

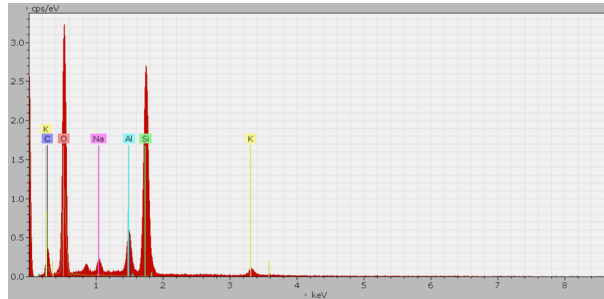


Lesson Plans

Basic Concept: Physical and chemical properties can be used to identify rocks and minerals

Instrument: SEM

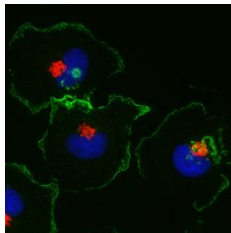
Grade levels/classes: Grade 6, High School Geology



Basic Concept: Reproduction is necessary for the continuation of every species

Instrument: Confocal Light Microscope

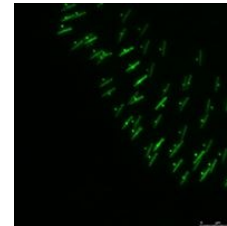
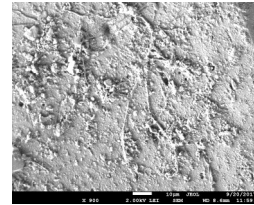
Grade levels/classes: Grade 8, High School Biology



Basic Concept: Cells go through a process called mitosis

Instrument: Confocal Light Microscope

Grade levels/classes: Grade 6, High School Biology

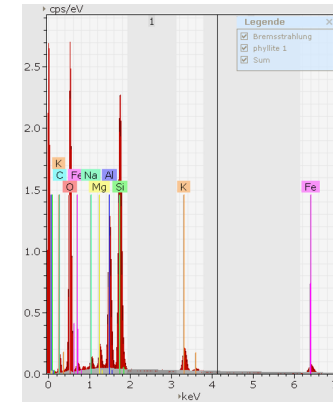


Lesson Plans

Basic Concept: A unique spectrum can be used to identify any element

Instrument: SEM

Grade levels/classes: High School Chemistry



	Series	unn. C [wt.%]	nor. C [wt.%]	Atom C [at.%]	Error (1 Sigma) [wt.%]
Oxygen	K series	58.80	50.73	61.26	7.86
Silicon	K series	24.55	21.18	14.57	1.08
Aluminium	K series	12.43	10.72	7.68	0.63
Carbon	K series	7.91	6.83	10.98	2.11
Iron	K series	5.25	4.53	1.57	0.28
Magnesium	K series	2.10	1.82	1.44	0.16
Potassium	K series	3.46	2.98	1.47	0.16
Sodium	K series	1.41	1.22	1.02	0.15
	Total	115.91	100.00	100.00	

In addition to the above lesson plans, the SCOPE Program is very flexible; lessons can be tailored to your classroom! Common samples include pollen, blood cells, insects, bacteria, and crystals such as salt or sugar.

