

Probírané metody

- XPS, ESCA, UPS
- X-AES, E-AES
- XRF – WDX, EDX
- EM – TEM, SEM, STEM
- STM, AFM, SNOM
- XRD, LEED, RHEED, THEED, neutronová difrakce
- SIMS
- IR (ATR, DRIFT? IRRAS), Raman – včetně mikroskopií, SERS, TERS
- NMR – 1D, 2D, CP-MAS, relaxometrie
- Využití synchrotronového záření

NIR
MIR
FR

Porovnání metod

- Informace o prvkovém složení

- XPS ESCA

- Augerova spektroskopie

- XRF – WDX, EDX

- SIMS

- Nepřímo

- EM SEM

- SNOM spektroskopie – některé techniky

- NIR/IR, Raman

- Difrakční metody

Porovnání metod

- Informace o molekulovém složení

- IR, Ramanova spektroskopie
- NMR spektroskopie
- Difrakční metody
- ESCA (XPS, UPS)
- SIMS - SSIMS

Porovnání metod

- Informace o struktuře (chemické)

- Difrakční metody

- NMR, Ramanova, IR spektroskopie

- Nepřímo

- UPS

- ESCA

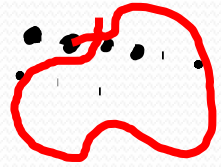
- SIMS

ROTAČNÍ

Porovnání metod

- Velikost („stopy“, laterální rozlišení)
- Možnosti fokusace záření či částicového paprsku a difrakční limita
- Možnosti technik blízkého pole
- Skenování primárním paprskem vs. skenování polohováním vzorku
- Způsoby sběru sekundárního záření/částic
- Metody detekce
- Metody konstrukce/rekonstrukce obrazu
- Vliv vlastností materiálu

SEM



Porovnání metod

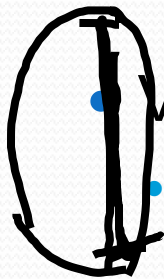
- Velikost „stopy“, laterální rozlišení
- ESCA – milimetry až 5 μm
- E-AES – až cca 10 nm
- SSIMS – až 5-10 nm (běžně 40 – 50 nm),
DSIMS – od desítek nm až po μm
- TEM – cca 0,2 nm (max. rozlišení?)
- SEM – 5 nm, TEM – 1 nm
- RTG mikrodifrakce – cca 1 μm^2 (stopa)
- IR – cm až desítky μm (SNOM IR – cca desítky nm)
- Raman – mm až 1 μm (TERS – cca deset nm)

Porovnání metod

- **Hloubka průniku / snimaného signálu**
- ESCA – od 1 nm (AR XPS), přes cca 8 až po 1000 nm – DP
- Auger – cca 2 nm, destruktivní DP – obdobně jako ESCA
- SSIMS – pod 1 nm, DSIMS – desítky nm
- TEM – až 100 nm
- IR – běžně jednotky μm – ale pozor IR SNOM
- Raman – běžně stovky nm – pozor TERS
- Značný vliv vlastností materiálu – prostupnost pro primární „záření“

Porovnání metod

- Riziko poškození vzorku
- Vliv energie jednotlivého kvanta primárního „záření“
 - RTG záření, částicové paprsky



- Vliv celkového toku primárního „záření“
- Laserové techniky

- Vliv nutnosti úprav vzorků před měřením
 - Vakuová aparatura
 - Specifika NMR

Porovnání metod

- In-situ analýza, ex-situ analýza

- In situ - možnost

- NMR relaxometrie

- IR, Raman

- XRF

- Ex-situ

- ESCA, UPS, AES, EM

- Difrakční metody

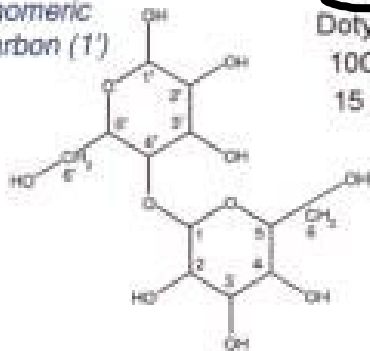
Rozměry objektů

- 3D makro
- 2D makro, 1D mikro
- 2D makro, 1D nano
- 1D makro, 2D mikro
- 1D makro, 2D nano
- 1D makro, 1D mikro, 1D nano
- 3D mikro
- 2D mikro, 1D nano
- 1D mikro, 2 D nano
- 3D nano

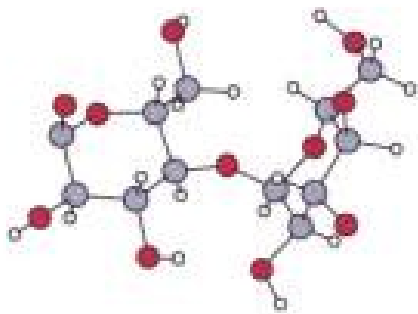
NMR solid state

^{13}C - ^1H (700 MHz) correlation spectrum of β -maltose monohydrate

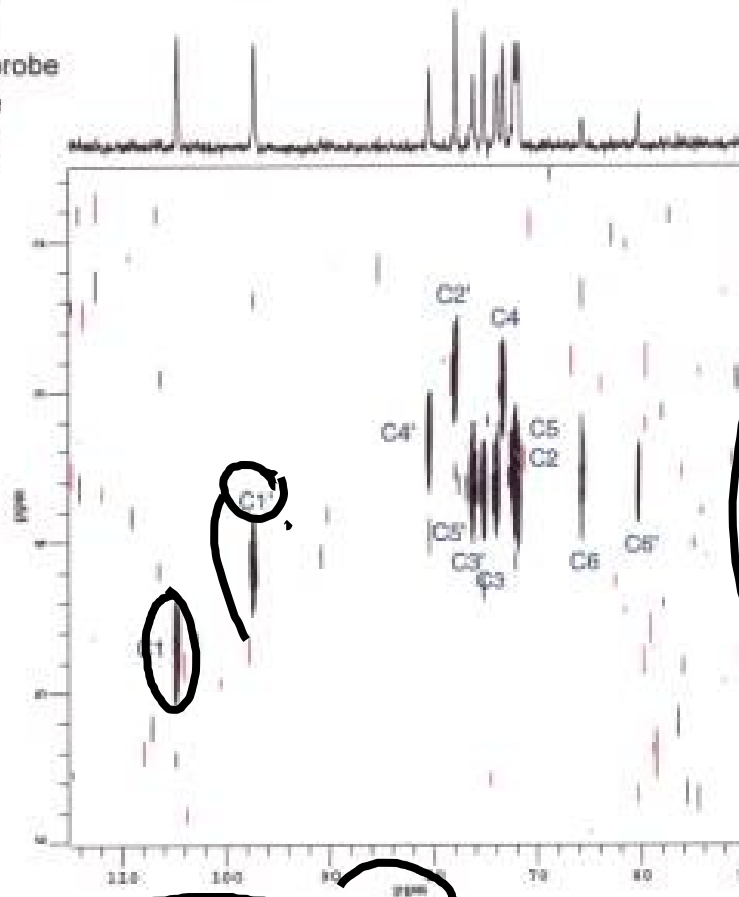
anomeric carbon (1')



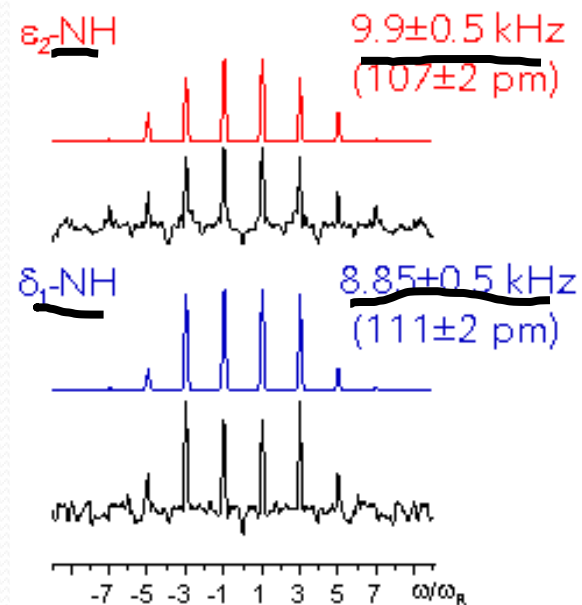
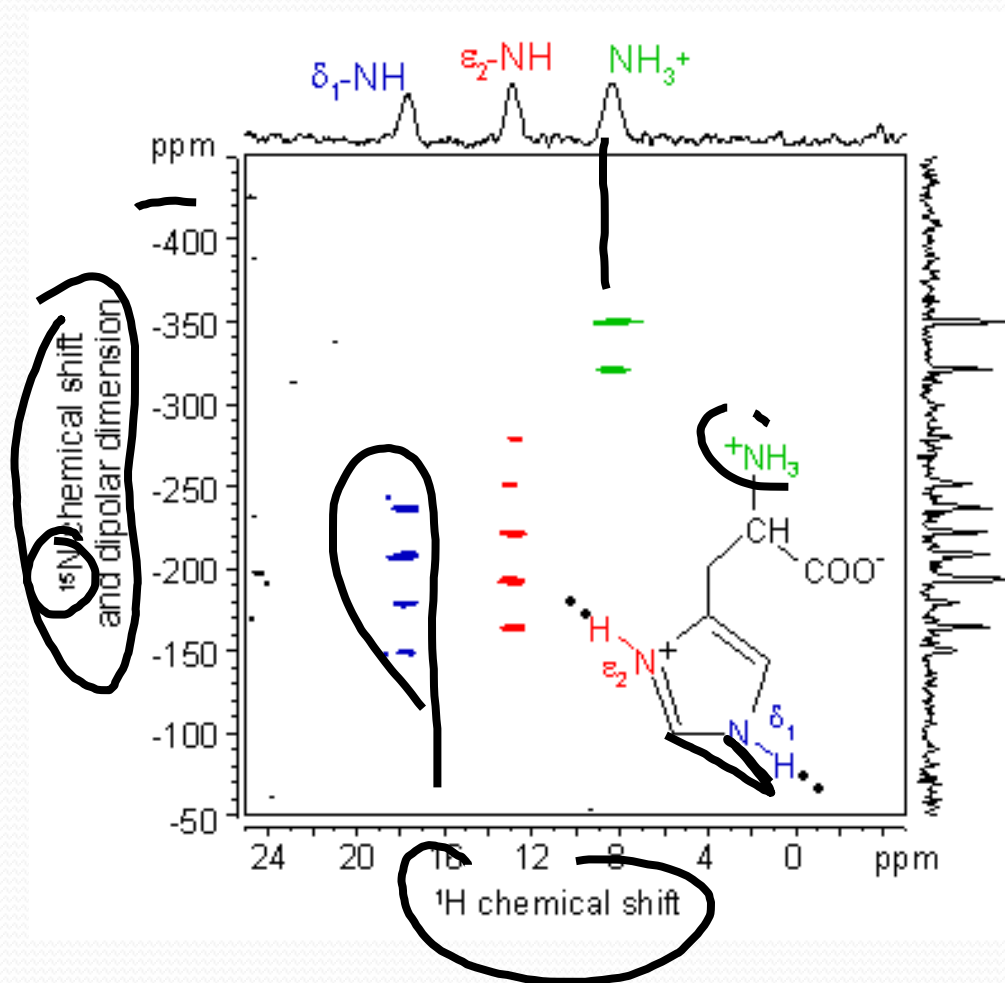
MAS 10 kHz
Doty 5 mm XC probe
100 mg sample
15 h expt. time



β -maltose monohydrate



NMR solid state



http://rruff.info/

The screenshot shows a web browser window displaying the RRUFF Project website. The browser's address bar shows the URL <http://rruff.info>. The website's navigation menu includes links for "Search Sample Data", "Search References", "About RRUFF", and "Contact Us". The main content area features a search form with the following fields and options:

- Mineral: lookup
- Chemistry Includes: lookup
- Chemistry Excludes:
- General:
- Sort By: Names asc
- Buttons: search, reset, display options

Below the search form, there is a link for "Terms and Conditions". A section titled "Mineral Samples" displays four images of minerals with their names below them: Skorpionite, Ferrimolybdate, Chalcocite, and Cotunnite. A "[more samples]" link is located below the images.

The RRUFF™ Project is creating a complete set of high quality spectral data from well characterized minerals and is developing the technology to share this information with the world. Our collected data provides a standard for mineralogists, geoscientists, gemologists and the general public for the identification of minerals both on earth and for planetary exploration. [more info...](#)

The Windows taskbar at the bottom of the screen shows the time as 10:38 on 5.12.2011.

RRUFF

RRUFF Database: Raman, | x

rruff.info/chem=carbonate/display=default/

Erasmus Mundus... Colloids and Materi... Analytická chemie n... NanoLandGlobal Ltd. asc Handbook of Surfac... Elektronová struktur... Zázloha kontaktů O2 Připoj se NAEP - Erasmus Mu... Vodafone park De Gruyter - Referen...

Tato stránka je v jazyce angličtina Chcete ji přeložit? Přeložit Ne Jazyk angličtina nikdy nepřekladat Možnosti x

RRUFF Home | UA Mineralogy | Caltech Mineralogy | The IMA Mineral List | Login

Search **Sample Data** Search **References** About RRUFF Contact Us

Welcome to the RRUFF Project website containing an integrated database of Raman spectra, X-ray diffraction and chemistry data for minerals.

Search RRUFF Sample Data

Search Results

Sort By: Names asc go

Displaying: - **Records Found**

checkbox	NAMES	RRUFF ID	IDEAL CHEMISTRY	SOURCE	LOCALITY	OPTIONS
No Records Found						

Displaying: - **Records Found**

Search Again:

Enter search criteria or leave all the fields blank to retrieve all available data.

Mineral: carbonate lookup

Chemistry Includes: lookup

Chemistry Excludes:

General:

Sort By: Names asc

search | reset | display options

Click an element once to include, twice to exclude. He

Li	Be	Clear Chemistry					B	C	N	O	F	Ne					
Na	Mg	Exclude all non-selected					Al	Si	P	S	Cl	Ar					
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
Cs	Ba	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	
Fr	Ra											**					
												* La Ce Pr Nd Pm Sm Eu Gd Tb Dy Ho Er Tm Yb Lu					
												** Ac Th Pa U					

10:39 5.12.2011

RRUFF

RRUFF Database: Raman, x

ruff.info/chem=C,Si/display=default/

Erasmus Mundus | Colloids and Materi... | Analytická chemie n... | NanoLandGlobal Ltd. | Handbook of Surfac... | Elektronová struktur... | Zálaha kontaktů | O2 Pílopoj se | NAEP - Erasmus Mu... | Vodafone park | De Gruyter - Referen...

Tato stránka je v jazyce **angličtina** | Chcete ji přeložit? **Přeložit** | **Ne** | **Jazyk angličtina nikdy nepřekládá** | **Možnosti**

RRUFF [Search Sample Data](#) [Search References](#) [About RRUFF](#) [Contact Us](#)

RRUFF Home | UA Mineralogy | Caltech Mineralogy | The IMA Mineral List | Login

Welcome to the RRUFF Project website containing an integrated database of Raman spectra, X-ray diffraction and chemistry data for minerals.

Search RRUFF Sample Data

Search Results

Sort By:

Displaying: 1 - 50 50 Records Found

<input type="checkbox"/>	NAMES	RRUFF ID	IDEAL CHEMISTRY	SOURCE	LOCALITY	OPTIONS
<input type="checkbox"/>	Aerinite	R050610	$(Ca_{5.1}Na_{0.5})(Fe^{3+}, Al, Fe^{2+}, Mg)_4(Al, Mg)_6[HSi_{12}O_{36}(OH)_{12}][CO_3]_{1.2}(H_2O)_{1.2}$	University of Arizona Mineral Museum	Estopinan, Province of Huesca, Spain	
<input type="checkbox"/>	Allorite	R070560	$(Na, K, Ca)_{29}(Si, Al)_{48}O_{96}(SO_4, Cl)_{5.6} \cdot n(CO_2, H_2O)$	Michael Scott S1001435	Monte Cavalluccio, near Campagnano di Roma, Rome, Latium, Italy	
<input type="checkbox"/>	Ashburtonite	R110003	$HCu_4Pb_4Si_4O_{12}(HCO_3)_4(OH)_4Cl$	Bob Jenkins	Tonopah-Belmont mine, Maricopa County, Arizona, USA	
<input type="checkbox"/>	Ashcroftine-(Y)	R110189	$K_3Na_5Y_{12}Si_{28}O_{70}(OH)_2(CO_3)_8 \cdot 8H_2O$	Donald Doell	Poudrette quarry, Mont Saint-Hilaire, Quebec, Canada	
<input type="checkbox"/>	Britvinit	R070222	$Pb_{15}Mg_9Si_{10}O_{30}(BO_3)_4(CO_3)_2(OH)_{12}$	Michael Scott S100445	Langban, Filipstad, Varmland, Sweden	
<input type="checkbox"/>	Britvinit	R070639	$Pb_{15}Mg_9Si_{10}O_{30}(BO_3)_4(CO_3)_2(OH)_{12}$	William W. Pinch	Kombat mine, Kombat, Grootfontein District, Otjozondjupa Region, Namibia	
<input type="checkbox"/>	Cancrinite	R050352	$(Na, Ca, Al)_8(Al, Si)_6O_{24}(CO_3)_2 \cdot 2H_2O$	California Institute of Technology	York River, quarry #2, Dunganon Township, Ontario, Canada	
<input type="checkbox"/>	Cancrinite	R100110	$(Na, Ca, Al)_8(Al, Si)_6O_{24}(CO_3)_2 \cdot 2H_2O$	Robert Woodside	French River, Ontario, Canada	
<input type="checkbox"/>	Carletonite	R050255	$KNa_4Ca_4Si_8O_{18}(CO_3)_4(F, OH) \cdot H_2O$	Marcus Origlieri	Mont Saint-Hilaire, Rouville County, Quebec, Canada	
<input type="checkbox"/>	Caysichite-(Y)	R080143	$(Ca, Yb, Er)_4Y_4Si_8O_{20}(CO_3)_6(OH) \cdot 7H_2O$	Mark Feinglos	Mt. Malos, Zomba District, Malawi	
<input type="checkbox"/>	Davynite	R060305	$(Na, Ca, K)_8(Si, Al)_{12}O_{24}(Cl, SO_4, CO_3)_{2-3}$	Michael Scott S100269	Bellerberg, Ettringen, Laacher See, Germany	
<input type="checkbox"/>	Defernite	R060619	$Ca_6(CO_3)_2SiO_4(OH)_{7-8}$	Michael Scott S100828	Kombat mine, Kombat, Grootfontein District, Otjozondjupa Region, Namibia	
<input type="checkbox"/>	Fencooperite	R061032	$Ba_6Fe^{3+}_3Si_6O_{23}(CO_3)_2Cl_3 \cdot H_2O$	Michael Scott S101302	Trumbull Peak, Mariposa County, California, USA	
<input type="checkbox"/>	Ferrisurite	R060055	$Pb_{2.4}Fe^{3+}_2Si_4O_{10}(CO_3)_{1.7}(OH)_3 \cdot nH_2O$	Marcus Origlieri	Shirley Ann Claim, Death Valley National Monument, Inyo County, California, USA	
<input type="checkbox"/>	Golyshevite	R061047	$Na_{10}Ca_9Zr_3Fe_2Si_{18}(Si_3O_9)_2(Si_3O_7)_2(OH)_3(CO_3) \cdot H_2O$	Michael Scott S100972	Mica mine, Kovdor, Kola, Russia	
<input type="checkbox"/>	Iimorite-(Y)	R070457	$Y_2(SiO_4)(CO_3)$	Michael Scott S101925	I and L No. 4 claim, Bokan Mountain, Prince of Wales Island, Prince of Wales-Outer Ketchikan Borough, Alaska, USA	
<input type="checkbox"/>	Kainosite-(Y)	R070759	$Ca_2Y_2(SiO_3)_4(CO_3) \cdot H_2O$	Michael Scott S104160	Bicroft mine, Cardiff Township, Haliburton Co., Ontario, Canada	
<input type="checkbox"/>	Kegelite	R080021	$Pb_4Al_2Si_4O_{10}(SO_4)(CO_3)_2(OH)_4$	William W. Pinch	Tsumeb, Namibia	
<input type="checkbox"/>	Marialite	R040043	$(Na, Ca)_4(Si, Al)_{12}O_{24}(Cl, CO_3, SO_4)$	University of Arizona Mineral Museum 8081	Gouverneur, New York, USA	
<input type="checkbox"/>	Marialite	R040113	$(Na, Ca)_4(Si, Al)_{12}O_{24}(Cl, CO_3, SO_4)$	University of Arizona Mineral Museum 4398	Gouverneur, New York, USA	
<input type="checkbox"/>	Marialite	R050123	$(Na, Ca)_4(Si, Al)_{12}O_{24}(Cl, CO_3, SO_4)$	Syed Shah	Pakistan	
<input type="checkbox"/>	Marialite	R060297	$(Na, Ca)_4(Si, Al)_{12}O_{24}(Cl, CO_3, SO_4)$	Herb Obodda 050	Morogoro District, Marasi, Tanzania	
<input type="checkbox"/>	Marialite	R060469	$(Na, Ca)_4(Si, Al)_{12}O_{24}(Cl, CO_3, SO_4)$	Michael Scott S100276	Mpwa-Mpwa mine, Umba Valley, near Arusha, Tanzania	

CS 10:41 5.12.2011

RRUFF



R110106

2 mm

R110106 - RRUFF Database: rruff.info/chem=C,Si/display=default/R110106

Name: Moissanite
Ideal Chemistry: SiC
Locality: Synthetic
Source: Gemological Institute of America 10-12-2010-11 [view label]
Owner: RRUFF
Description: A cut, colorless (0.45ct) gemstone, sublimation grown.
Status: The identification of this mineral is not yet confirmed.

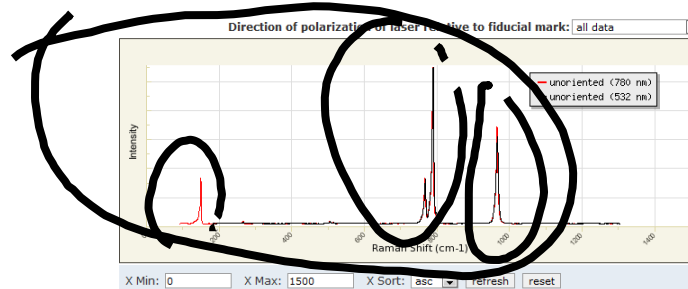
Quick search: [All Moissanite samples (2)]

RAMAN SPECTRUM

RRUFF ID:

DOWNLOADS:

To download sample data, please select a specific orientation angle.



BROAD SCAN WITH SPECTRAL ARTIFACTS

RRUFF ID: R110106

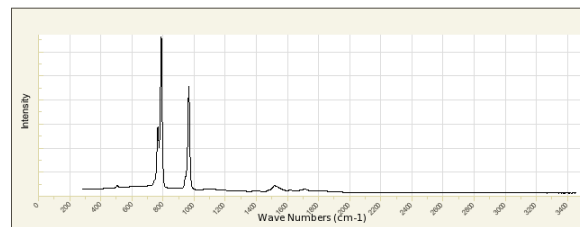
Wavelength:

Sample Description:

Instrument settings: Thermo Almega XR 780nm @ 65% of 600mW

DOWNLOADS:

Raman Data (RAW)
RRUFF File



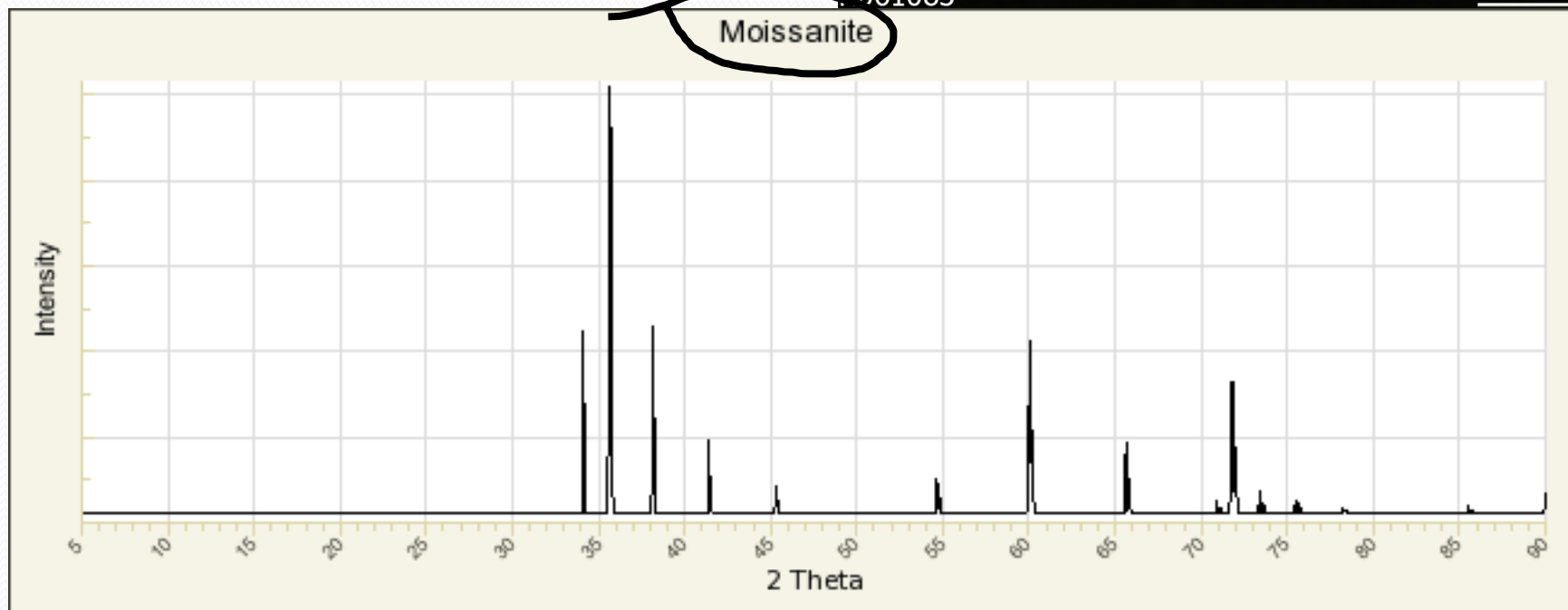
RRUFF



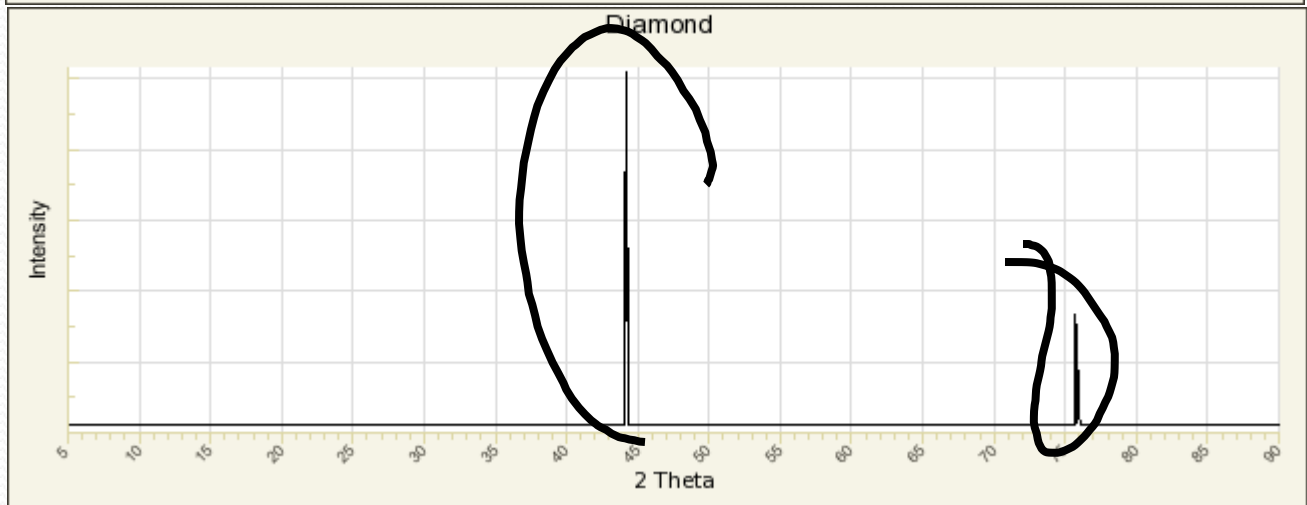
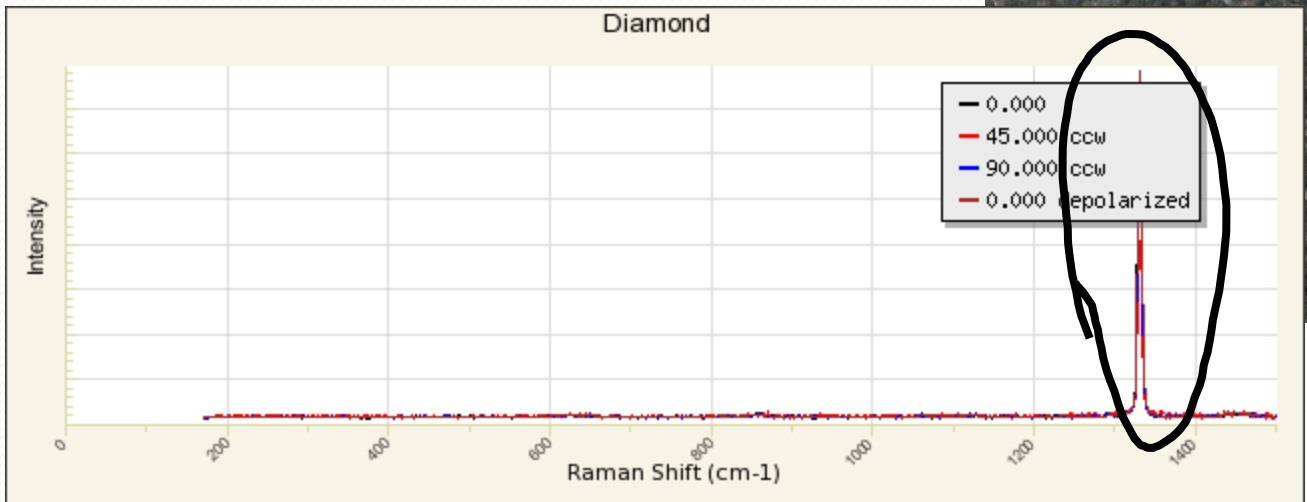
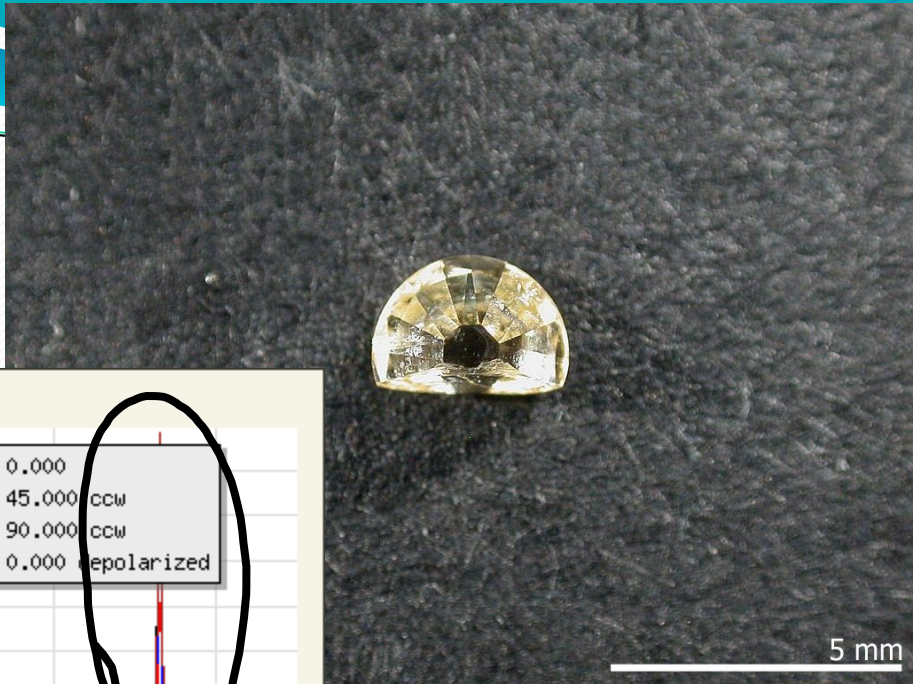
P061083

5 mm

Moissanite



RRUFF

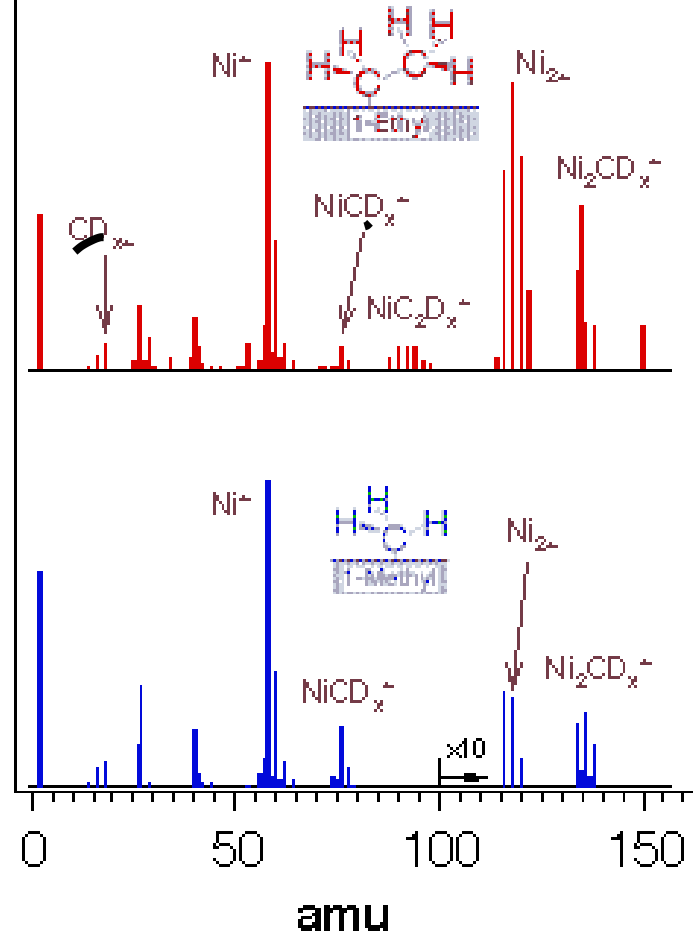
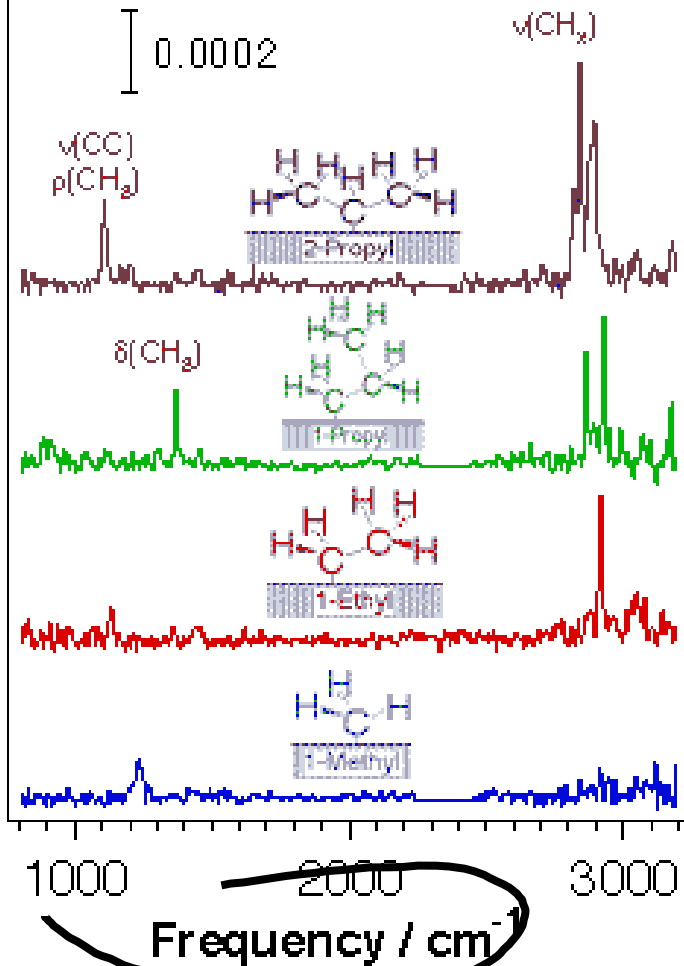


Production of Surface Alkyls

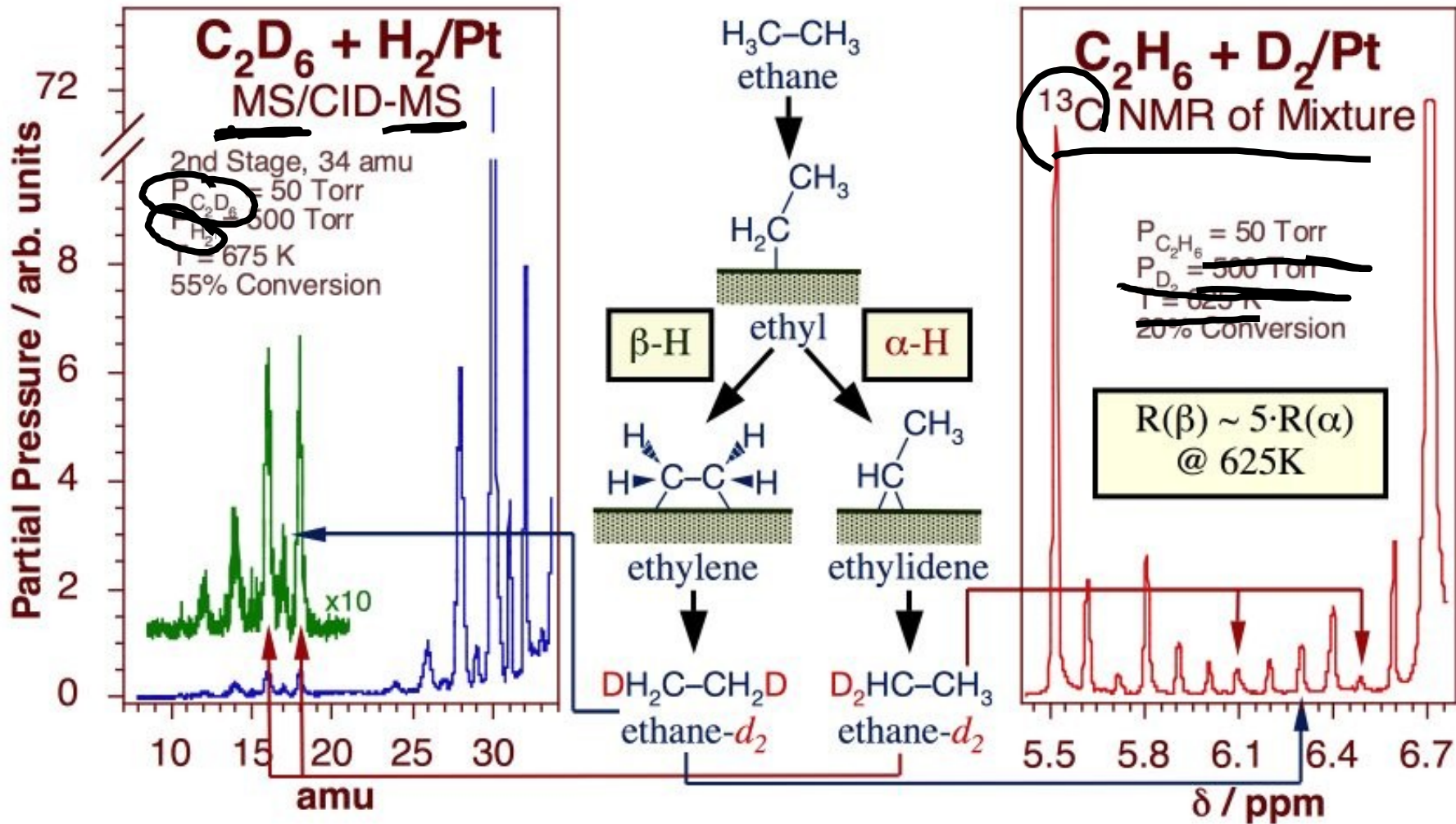
~~FTIR~~ on Cu(110)

SSIMS on Ni(100)

Absorbance



Ion Intensity / arb. units



SIMS

Select Material From Library

Load

Reset

Help

Close

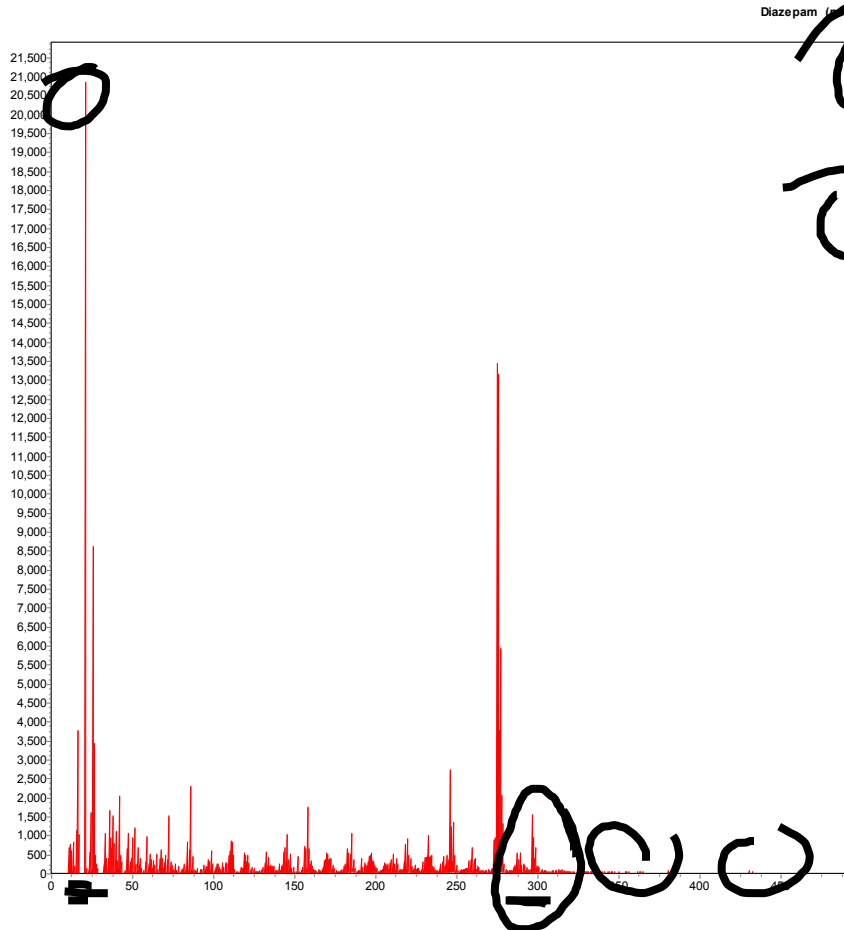
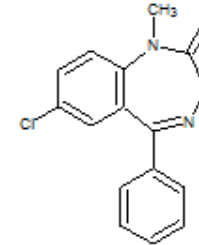
View structure

Materials | Filter options

Material	CAS Registry	Merck Index No.	Mol. Wt.	Particle	Sample conditions	Ex situ treatment	In situ treatment
Cellulose triacetate				69 Ga +			
Cerium (III) sulfate, hydrate	13454-94-9	11,1996	567.67	Ar +	Powder pressed into indium.	None	None
Cerium (IV) oxide	1306-38-3	11,1986	171.90	Ar +	Pressed pellet of powder, baked at 120 °C. Att	None	None
Cerium (IV) sulfate, hydrate	13590-82-4	11,1987	331.81	Ar +	Powder pressed into indium.	None	None
Cerium phosphate, hydrate			234.86	Ar +	Powder pressed into indium.	None	None
Cetyl pyridinium chloride hydrate	6004-24-6	11,2024	339.27	Cs +	Powder.	None	None
Chicken egg white lysozyme	12650-88-3			Cs +	Adsorbed onto mica from 100 µg/ml solution in	Rinsed copiously in deionized water	None
Chimassorb 119 FL	106990-43-6		2284.05	Cs +	Powder.	None	None
Chimassorb 944	71878-19-8			69 Ga +	Powder on tape.	None	None
China clay				Cs +	Powder on tape mounted under a stainless ste	None	None
Chlorambucil	305-03-3	11,2064	303.08	69 Ga +		None	None
Chloramphenicol	56-75-7		322.01	Au +	Dried droplet on silicon.	None	None
Chlorhexidine	55-56-1	11,2090	504.20	69 Ga +	Thin film on aluminium, cast from chloroform.	None	None
Chlorobenzoic acid			156.00	69 Ga +	Powder.	None	None
Chloroparaffin, 50% wt/wt chlorine				69 Ga +			
Cholesterol	57-88-5	11,2204	386.36	69 Ga +	Evaporated onto gold	None	None
Chromium (III) acetylacetonate	21679-31-2		349.07	69 Ga +	Powder pressed into indium.	None	None
Chromium (III) oxide	1308-38-9		151.87	69 Ga +	Spin cast from 0.1 M THF solution on to a silic	None	Sputter cleaned with a ~8×10 ¹³ 69 Ga+ ion d
Chromium (III) oxide	1308-38-9	11,2229	151.87	69 Ga +		Cleaned ultrasonically in methylene chloric	Sputter cleaned using continuous Ga sour
Chromium (VI) oxide	1333-82-0		99.93	69 Ga +	Powder pressed into indium.	None	Sputter cleaned with a ~8×10¹³ 69 Ga+ io
Cinnamic acid	621-82-9		148.052	69 Ga +	Film cast from 1 mM solution in chloroform		
Cis-bis (triphenylphosphine) platinum dichloride			789.08	Cs +	Spin cast from chloroform onto a silicon wafer	None	None
Clofazimine	2030-63-9	11,2370	472.122	Au +	Film cast from 1 mM methanol solution on to s		
Cobalt (II) carbonate, hydrate	513-79-1	11,2430	118.92	69 Ga +	Powder pressed in to indium.	None	15 second etch, 600 pA, 200 × 200 µm raster.
Cobalt (II) oxide	1307-96-6		74.93	69 Ga +	Powder pressed into indium.	None	Sputter cleaned with a ~8×10 ¹³ 69 Ga+ ion d
Cobalt (II,III) oxide	1308-06-1		240.78	69 Ga +	Powder pressed into indium.	None	Sputter cleaned with a ~8×10 ¹³ 69 Ga+ ion d
Cobalt phthalocyanine	3317-67-7		571.08	69 Ga +	Powder pressed in to indium. Sample mounte	None	None
Cobalt tetraazannulene			345.06	69 Ga +	Powder pressed in to indium. Sample mounte	None	None
Cocaine hydrochloride (cationised)	53-21-4	11,2450	339.12	Ar +	Thin film of solution deposited on to a 150 mm	Sample dissolved in methanol to form ~ 1 mg/	None
Copper				69 Ga +			Sputtered with a gallium ion beam
Copper (II) oxide				69 Ga +	Powder pressed into In		
Copper (II) oxide	1317-38-0		78.92	69 Ga +	Powder pressed into indium.	None	Sputter cleaned with a ~8×10 ¹³ 69 Ga+ ion d
Copper hydroxide				69 Ga +	Freshly precipitated powder pressed into I		
Copper hydroxycarbonate				69 Ga +	Powder pressed into In		
Cyanox 1790	040601-76-1		699.43	69 Ga +	Cast from acetone onto aluminium.	None	None
Cyanox 2246	000119-47-1		340.24	69 Ga +	Cast onto aluminium.	None	None
Cyanuric Acid	108-80-5		129.02	69 Ga +	Powder pressed in to indium foil.	None	None
Cyasorb UV-3346	082451-48-7			69 Ga +	Cast from toluene solution onto silicon.	None	None
Cyastat 609	018602-17-0		473.30	Cs +	Spin cast from 1% solution in propan-1-ol.	None	None

SIMS

Diazepam



Diazepam (positif)

Positive Ions

285 (M+H)

Negative Ions

319 (M+Cl)

283 (M-H)

SurfaceSpectra Static SIMS Library 4 - Demonstration Version - [Diazepam]

File Edit View Zoom Presets Window Help

Mass Intensity

Diazepam

CAS Registry Number

439-14-5

Merck Index

Molecular weight

284.07

Purity

Primary particle

Au +

Positive ion conditions

15 keV, ~ 4x10¹¹

Negative ion conditions

15 keV, ~ 4x10¹¹

Charge compensation

Yes

Sample state

Dried droplet on silicon.

Ex situ treatment

None

In situ treatment

None

Material supplier

Sigma, UK (0)314 771 5750

SIMS

Dodecanethiol, self assembled monolayer on gold

CAS Registry Number Merck Index Molecular weight Purity

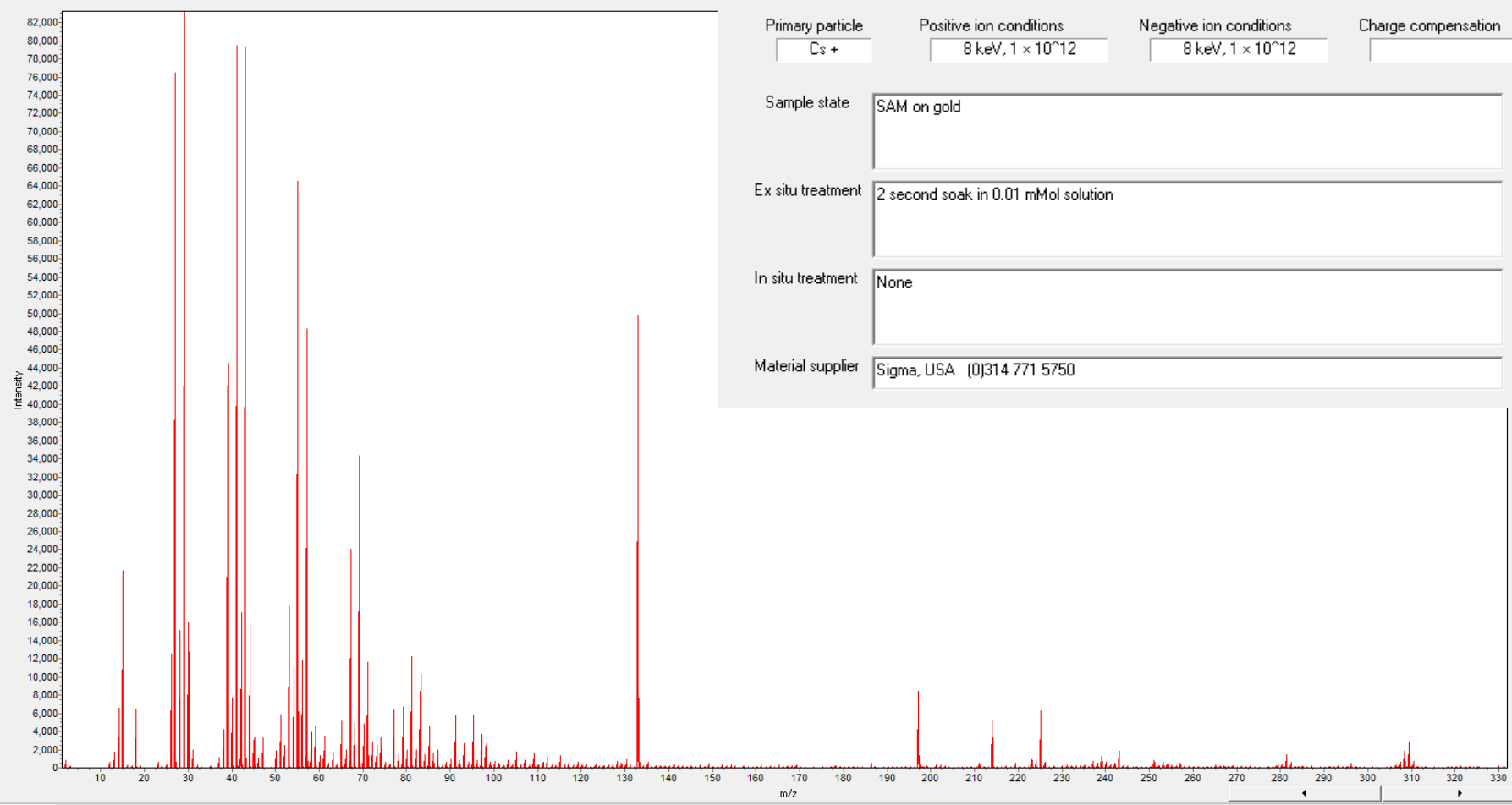
Primary particle Positive ion conditions Negative ion conditions Charge compensation

Sample state

Ex situ treatment

In situ treatment

Material supplier

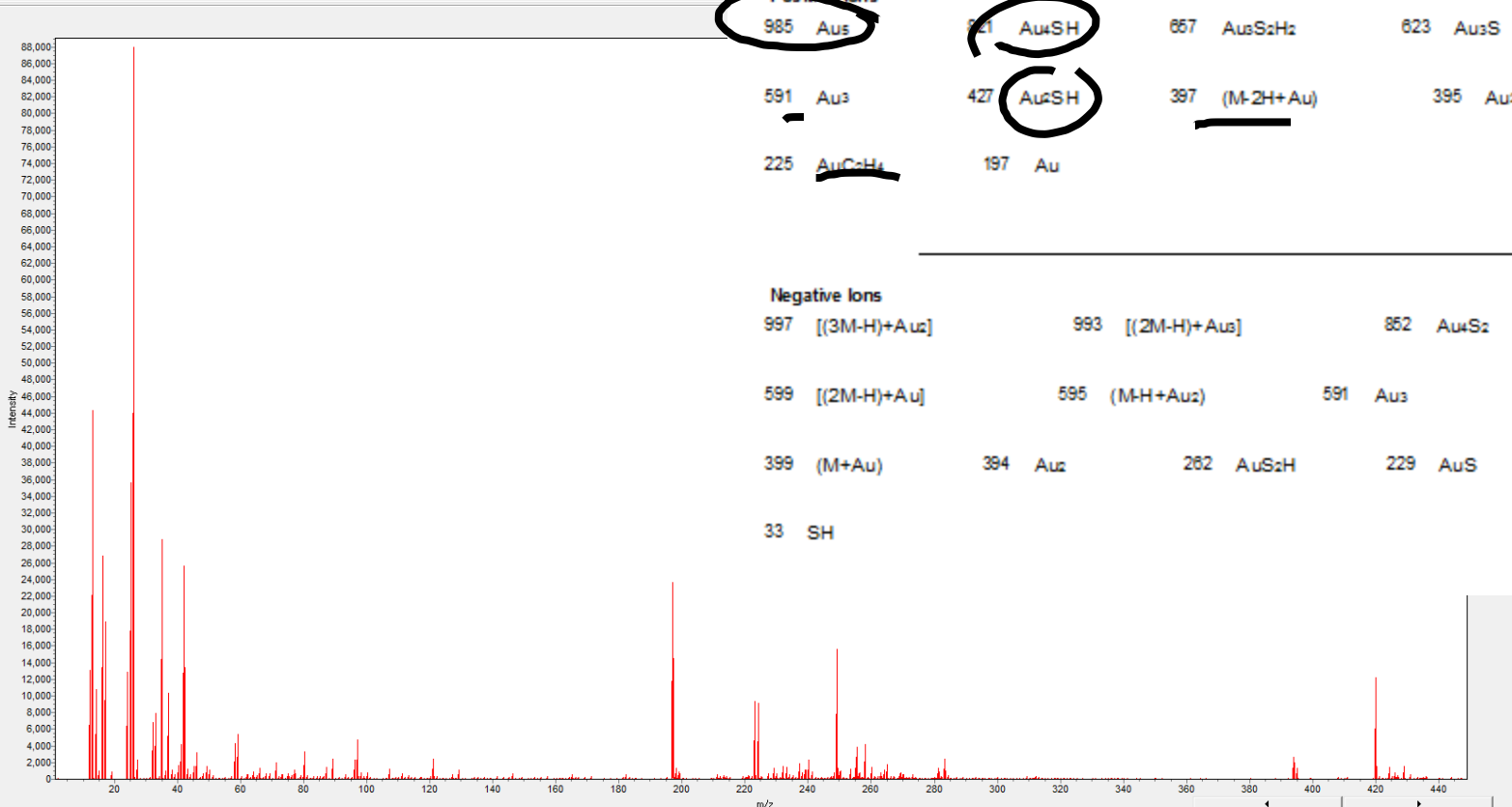


SIMS

Dodecanethiol, self assembled monolayer on gold

SH(CH₂)₁₁CH₃ on Au

SurfaceSpectra Static SIMS Library 4 - Demonstration Version - [Dodecanethiol, self assembled monolayer on gold]
 File Edit View Zoom Presets Window Help
 Mass 136.741 Intensity 46844



Positive Ions

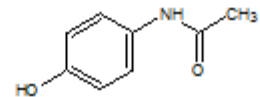
985 Au ₃	821 Au ₂ SH	657 AuS ₂ H ₂	623 Au ₃ S	595 (M-H+Au ₂)
591 Au ₃	427 Au ₂ SH	397 (M-2H+Au)	395 Au ₂ H	243 AuSCH ₂
225 AuC ₂ H ₄	197 Au			

Negative Ions

997 [(3M-H)+Au ₂]	993 [(2M-H)+Au ₃]	852 Au ₄ S ₂	623 Au ₃ S
599 [(2M-H)+Au]	595 (M-H+Au ₂)	591 Au ₃	428 Au ₂ S
399 (M+Au)	394 Au ₂	262 AuS ₂ H	229 AuS
33 SH			197 Au

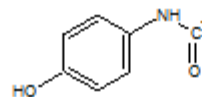
Positive ion | **Negative ion** | Sample and Experiment | Instrument

Paracetamol

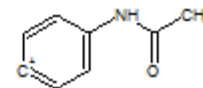


Positive Ions
152 (M+H)

136



134



Negative Ions

SurfaceSpectra Static SIMS Library 4 - Demonstration Version - [Paracetamol]

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Mass Intensity

Paracetamol

CAS Registry Number	Merck Index	Molecular weight	Purity
103-90-2	11,40	151.06	
Primary particle	Positive ion conditions	Negative ion conditions	Charge compensation
69 Ga +	15 keV, 5x10 ⁻¹²	15 keV, 5x10 ⁻¹²	
Sample state	Powder on double-sided tape.		
Ex situ treatment			
In situ treatment			
Material supplier	< not available >		

