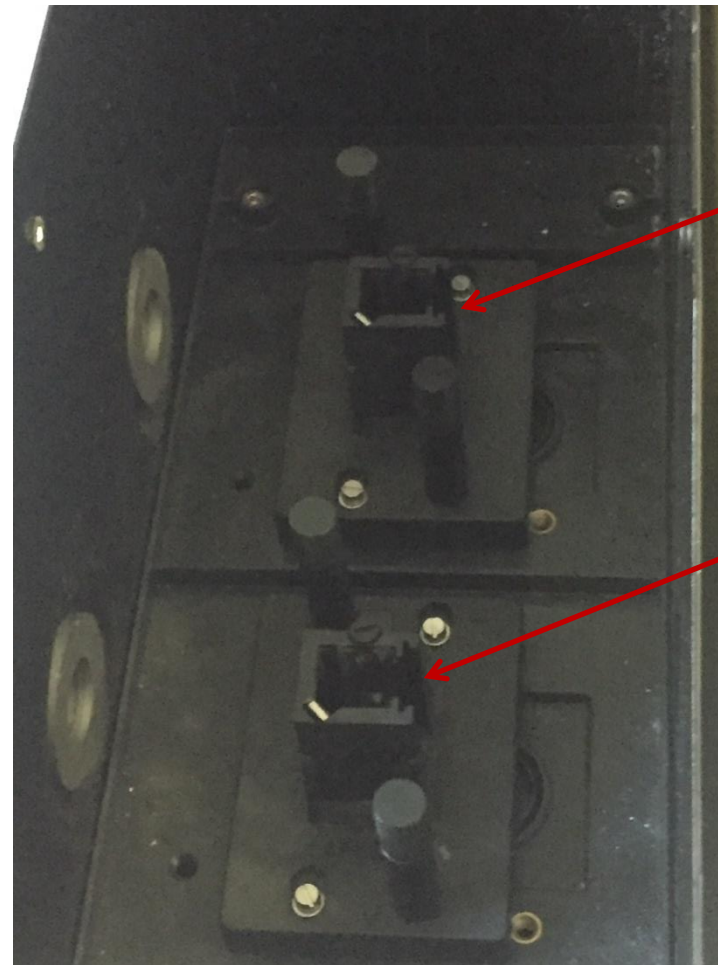


LO SPETTROFOTOMETRO UV-VISIBILE

Strumento a doppio raggio



Il solvente

Il campione

Le **cuvette**:

- ✓ maneggiate sulla **parte alta** (in plastica) o sulla parte **zigrinata** (in quarzo);
- ✓ il cammino ottico **più lungo** attraversato dalla radiazione;
- ✓ sempre la **stessa orientazione**: prendere il triangolo come riferimento.

I PARAMETRI

Il metodo:

The screenshot displays the UV WinLab software interface. The main window is titled "C:\UVWINLAB\METHOD\SCANLI.MSC" and contains the following sections:

- SCAN:** Start wavelength: 950.0 nm, End wavelength: 330.0 nm, Data interval: 1.0 nm, Number of cycles: 1.
- OUTPUT:** Autosave: On Off, Autoprint: On Off, Autolist: On Off List..., Ordinate max.: 1,000, Ordinate min.: 0,000, Display: Overlay.
- End of Run Application: [Empty text box]
- Method info: scan method lab inorg

At the bottom of the main window, there are three buttons: "Scan.", "Inst.", and "Sample". These three buttons are circled in red. Below the main window, there are three smaller windows: "Data Region", "ResultWi...", and "Graph1". The status bar at the bottom shows "649.2 nm -0.0427 A Slit 2,0". The Windows taskbar at the very bottom shows the start button, "Graph Server v1.60", "InstrumentServUV", "Report Builder - C...", "UV WinLab [C:\UV...", "IT", and the system clock "11.18".

I PARAMETRI

Il metodo:

The screenshot displays the UV WinLab software interface. The main window is titled "C:\UVWINLAB\METHOD\SCANLI.MSC" and contains an "INSTRUMENT" control panel. The panel includes several settings: Ordinate mode is set to "A"; Scan speed is 480 nm/min; Lamp UV is turned Off; Lamp Vis is turned On; Slit is 1.00 nm; and Lamp change is 326.0 nm. At the bottom of the interface, a status bar shows the current measurement data: 649.2 nm, -0.0424, A, and Slit 2.0. The Windows taskbar at the bottom shows the Start button and several open applications, including Graph Serv..., InstrumentS..., Report Build..., UV WinLab [...], and UWisscreen..., along with the system clock showing 11.23.

UV WinLab [C:\UVWINLAB\METHOD\SCANLI.MSC]

File View Utilities Application Data handling Window Help

Start Autozero Setup

C:\UVWINLAB\METHOD\SCANLI.MSC

INSTRUMENT

Ordinate mode : A Scan speed : 480 nm/min

Lamp UV : On Off Smooth : 0 nm

Lamp Vis : On Off

Slit : 1.00 nm

Lamp change : 326.0 nm

Scan. Inst. Sample

Data Region ResultWi... Graph1

649.2 nm -0.0424 A Slit 2.0

start Graph Serv... InstrumentS... Report Build... UV WinLab [...] UWisscreen... IT 11.23

IMPOSTAZIONE DELL'ESPERIMENTO

Il numero di campioni da analizzare con la stessa linea di base

UV WinLab [C:\UVWINLAB\METHOD\SCANLI.MSC]

File View Utilities Application Data handling Window Help

Start Autozero Setup

Result Filename : EXP01

Calculation factor : Factor Number of samples : 6

Fill down Delete row Insert row

No.	Sample Identity	Factor	Sample Info
1	EXP01	1,0000	[Cr(H2O)4Cl2][Cl]
2	EXP02	1,0000	
3	EXP03	1,0000	
4	EXP04	1,0000	
5	EXP05	1,0000	
6	EXP06	1,0000	

Scan. Inst. Sample

Data Region ResultWi... Graph1

649.2 nm -0.0422 A Slit 2,0

start Graph Serv... InstrumentS... Report Build... UV WinLab [... UWisscreen... IT 11.25

Il nome del file:
Scrivere sempre nomi diversi, due nomi uguali bloccano lo spettrometro

Il commento: identifica il campione in analisi

ESECUZIONE DELL'ESPERIMENTO

- ✓ **Portare nello stanzino:**
 - i matracci con le soluzioni,
 - delle pipette Pasteur nuove,
 - un becker da 100 mL per raccogliere le soluzioni analizzate e le acque di lavaggio,
 - la spruzzetta con l'acqua distillata,
 - della carta industriale;
- ✓ **Tenete la coppia di cuvette in plastica nel vostro scafetto;**
- ✓ **Le soluzioni nei vari solventi organici (toluene, metanolo, acetonitrile, dimetilsolfossido, etc.) vanno maneggiate sotto cappa;**
- ✓ **Maneggiare con attenzione le **cuvette in quarzo**;**
- ✓ **Registrare la **linea di base**;**
- ✓ **Registrare lo **spettro del campione**;**
- ✓ **La **cuvette**:**
 - ✓ deve essere avvinata con la vostra soluzione,
 - ✓ non ci devono essere bolle d'aria,
 - ✓ il livello della soluzione deve arrivare fino a 0.5 cm dal bordo,
 - ✓ deve essere messa nell'alloggiamento **sempre** con la **stessa orientazione**.

REGISTRAZIONE DELLA LINEA DI BASE

Mettere negli alloggiamenti le **due cuvette** contenenti entrambe lo **stesso solvente**.

Cliccare su **Start**

The screenshot shows the UV WinLab software interface. The main window is titled 'C:\UVWINLAB\METHOD\SCANLI.MSC'. It features a menu bar (File, View, Utilities, Application, Data handling, Window, Help) and a toolbar with buttons for 'Start', 'Autozero', and 'Setup'. A red arrow points to the 'Start' button. Below the toolbar, there are input fields for 'Result Filename' (EXP01), 'Calculation factor' (Factor), and 'Number of samples' (6). A table with columns 'No.', 'Sample Identity', 'Factor', and 'Sample Info' is displayed, containing six rows of data. The status bar at the bottom shows '649.2 nm -0.0422 A Slit 2.0'.

No.	Sample Identity	Factor	Sample Info
1	EXP01	1,0000	[Cr(H2O)4Cl2][Cl]
2	EXP02	1,0000	
3	EXP03	1,0000	
4	EXP04	1,0000	
5	EXP05	1,0000	
6	EXP06	1,0000	

REGISTRAZIONE DELLA LINEA DI BASE

Cliccare su **OK**

The screenshot displays the UV WinLab software interface. At the top, the title bar reads 'UV WinLab [C:\UVWINLAB\METHOD\SCANLI.MSC]'. Below it is a menu bar with 'File', 'View', 'Utilities', 'Application', 'Data handling', 'Window', and 'Help'. A toolbar contains various icons, including a red 'Stop' button, 'Autozero', and 'ABC'. The main window features a 'Graph1' plot with a grid. The y-axis ranges from 0,00 to 1,00, and the x-axis ranges from 330,0 to 700,0. A 'Sample Change' dialog box is open in the center, with the text 'Please insert next sample: 'Blank'' and two buttons: 'OK' and 'Annulla'. A red arrow points from the text 'Cliccare su OK' to the 'OK' button. Below the graph, there are tabs for 'Scan.', 'Inst.', and 'Sample'. At the bottom, a status bar shows '649.2 nm', 'A', and 'Slit 1.0'. The Windows taskbar at the very bottom shows the 'start' button and several open applications, including 'UV WinLab [...]' and 'UVWisscreen...'. The system clock shows '11.29'.

REGISTRAZIONE DELLO SPETTRO DELLA SOLUZIONE DA ANALIZZARE

Mettere nell'alloggiamento del campione la cuvette con la soluzione da analizzare.

Cliccare su **OK**

The screenshot displays the UV WinLab software interface. At the top, the title bar reads 'UV WinLab [C:\UVWINLAB\METHOD\SCANLI.MSC]'. Below it is a menu bar with 'File', 'View', 'Utilities', 'Application', 'Data handling', 'Window', and 'Help'. A toolbar contains various icons, including a red 'Stop' button, 'Autozero', and several spectral analysis icons. The main window features a 'Graph1' plot with a y-axis from 0.00 to 1.00 and an x-axis from 330.0 to 700.0. A 'Sample Change' dialog box is open, displaying the text 'Please insert next sample: 'EXP01'' and two buttons: 'OK' and 'Annulla'. A red arrow points from the text 'Cliccare su OK' to the 'OK' button. At the bottom, a status bar shows '950.0 nm' and '0.0015 A' circled in red, along with 'Slit 1,0'. The Windows taskbar at the very bottom shows the 'start' button and several open applications, including 'Graph Serv...', 'InstrumentS...', 'Report Build...', 'UV WinLab [...]', 'UVWisscreen...', and 'IT', with the system clock showing '11:31'.

REGISTRAZIONE DELLO SPETTRO DELLA SOLUZIONE DA ANALIZZARE

Terminato di registrare gli spettri di tutte le soluzioni

Cliccare su
Annulla

The screenshot displays the UV WinLab software interface. At the top, the title bar reads 'UV WinLab [C:\UVWINLAB\METHOD\SCANLI.MSC]'. Below it is a menu bar with 'File', 'View', 'Utilities', 'Application', 'Data handling', 'Window', and 'Help'. A toolbar contains various icons, including a red 'Stop' button and 'Autozero'. The main window features a 'Graph1' plot with a grid. The y-axis ranges from 0,00 to 1,00, and the x-axis ranges from 330,0 to 700,0. A 'Sample Change' dialog box is open in the foreground, displaying the text 'Please insert next sample: 'EXP01'' and two buttons: 'OK' and 'Annulla'. A red arrow points from the text 'Cliccare su Annulla' to the 'Annulla' button. At the bottom of the software window, there are tabs for 'Scan.', 'Inst.', and 'Sample'. Below these tabs, a status bar shows '950.0 nm', '0.0015 A', and 'Slit 1.0'. The Windows taskbar at the very bottom shows the 'start' button and several open applications, including 'Graph Serv...', 'InstrumentS...', 'Report Build...', 'UV WinLab [...]', 'UVWisscreen...', and 'IT', with the system clock showing '11.31'.

REGISTRAZIONE DELLO SPETTRO DELLA SOLUZIONE DA ANALIZZARE

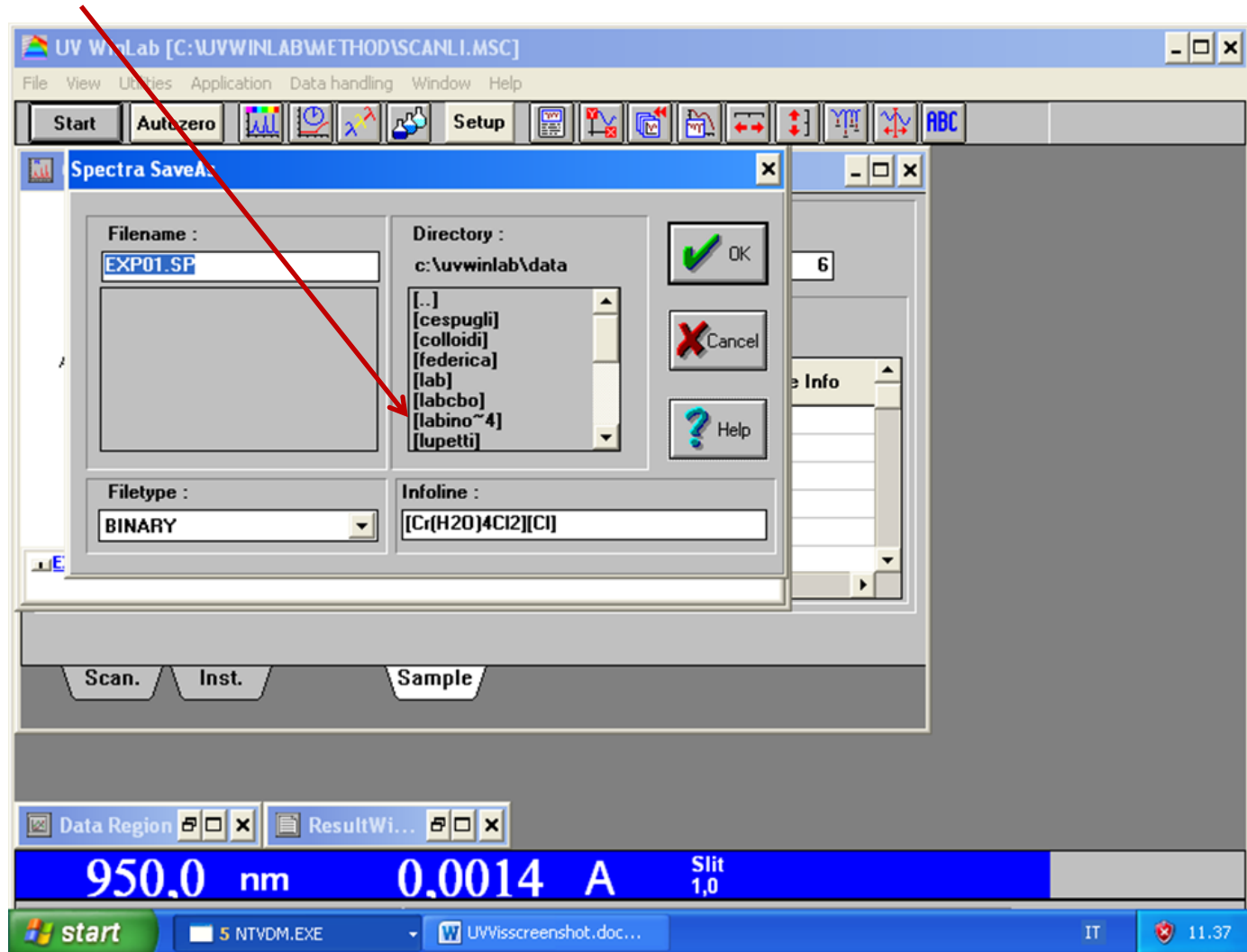
Terminato di registrare gli spettri di tutte le soluzioni

Cliccare su **OK**

The screenshot displays the UV WinLab software interface. The main window, titled "UV WinLab [C:\UVWINLAB\METHOD\SCANLI.MSC]", features a menu bar (File, View, Utilities, Application, Data handling, Window, Help) and a toolbar with various icons. A central window titled "Graph1" shows a plot of Absorbance (A) versus Wavelength (nm). The y-axis ranges from 0,00 to 1,00, and the x-axis ranges from 330,0 to 500. A blue line represents the recorded spectrum, which is currently flat at 0,00. Below the graph, the file name "EXP01.SP" is visible. A dialog box titled "UV WinLab [C:\UVWINLAB\METHOD\SCANLI.MSC]" is overlaid on the graph, displaying the message "Method and sampler stopped" and an "OK" button. A red arrow points from the text "Cliccare su OK" to the "OK" button. At the bottom of the software window, a status bar shows "950,0 nm", "0,0012 A", and "Slit 1,0". The Windows taskbar at the bottom shows the start button, open applications (5 NTVDM.EXE, UVWisscreenshot.doc...), and the system tray with the date and time (11.34).

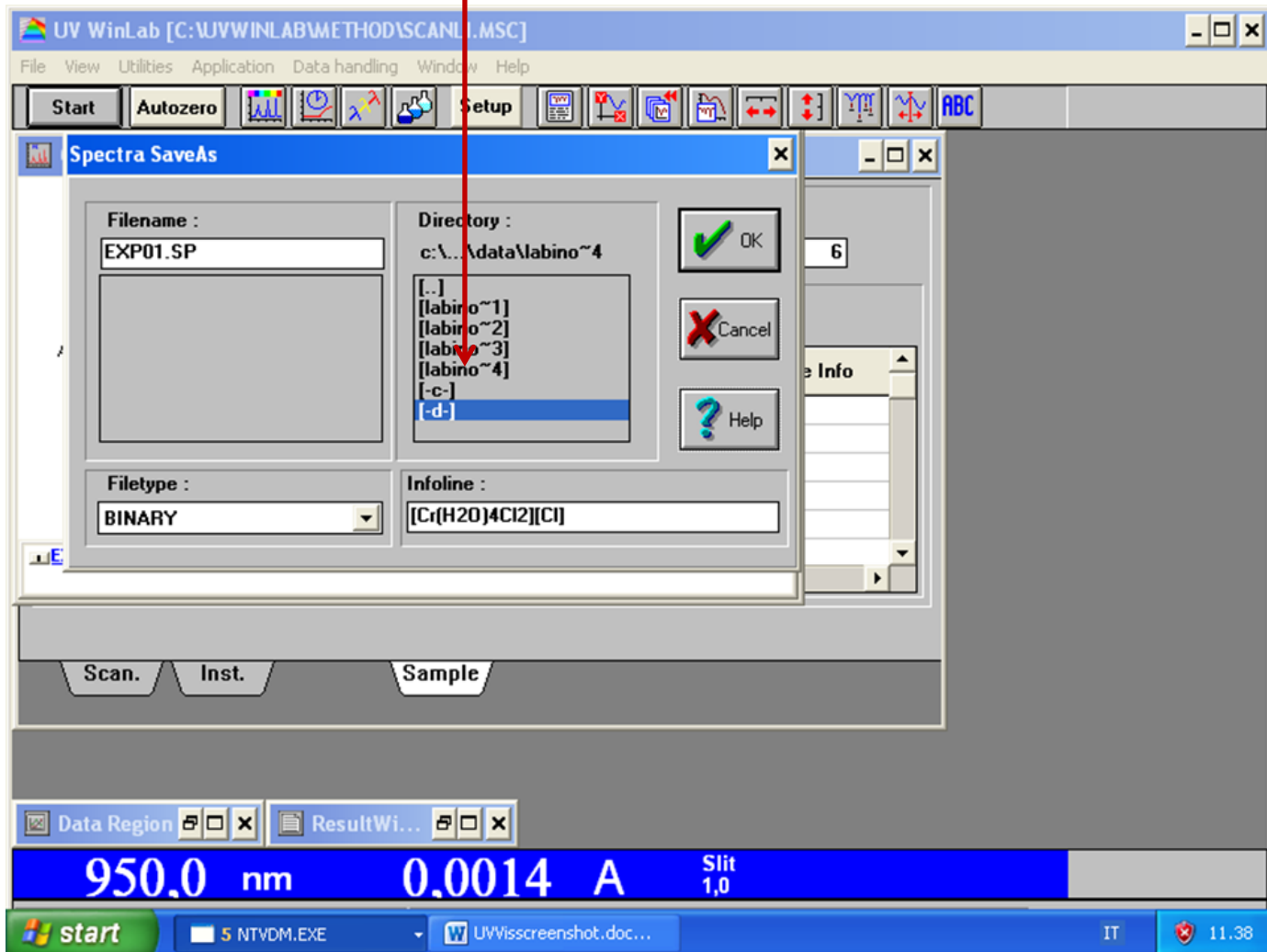
SALVARE I FILE DEGLI SPETTRI REGISTRATI

- ✓ Andare in file – **save as**;
- ✓ Scegliere la directory in cui salvare il file:
- ✓ **LabInorg_Milani** – LabInorg2020 - gruppo ... - il vostro cognome



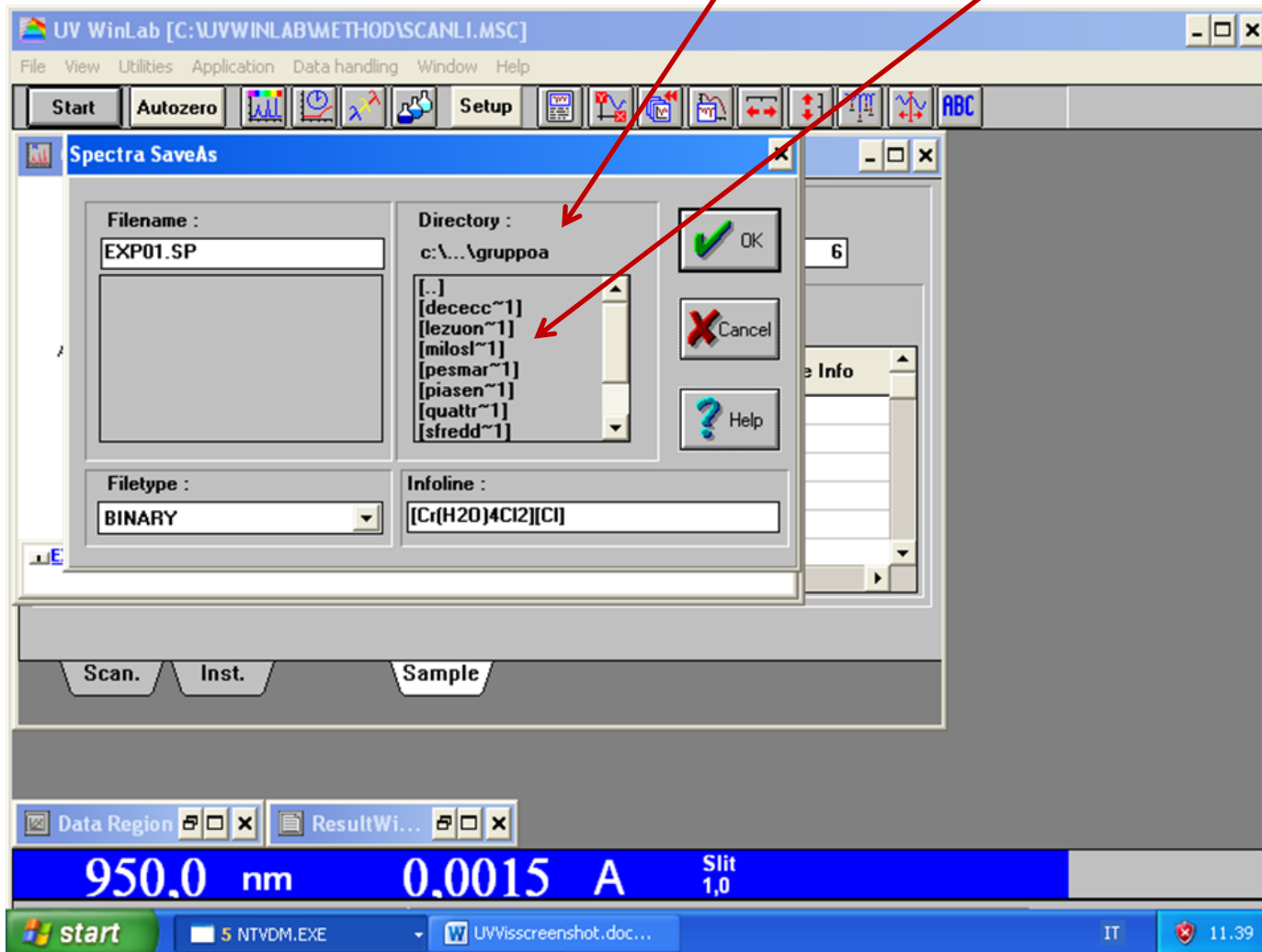
SALVARE I FILE DEGLI SPETTRI REGISTRATI

- ✓ Andare in file – **save as**;
- ✓ Scegliere la directory in cui salvare il file:
- ✓ LabInorg_Milani – **LabInorg2020** - gruppo ... - il vostro cognome



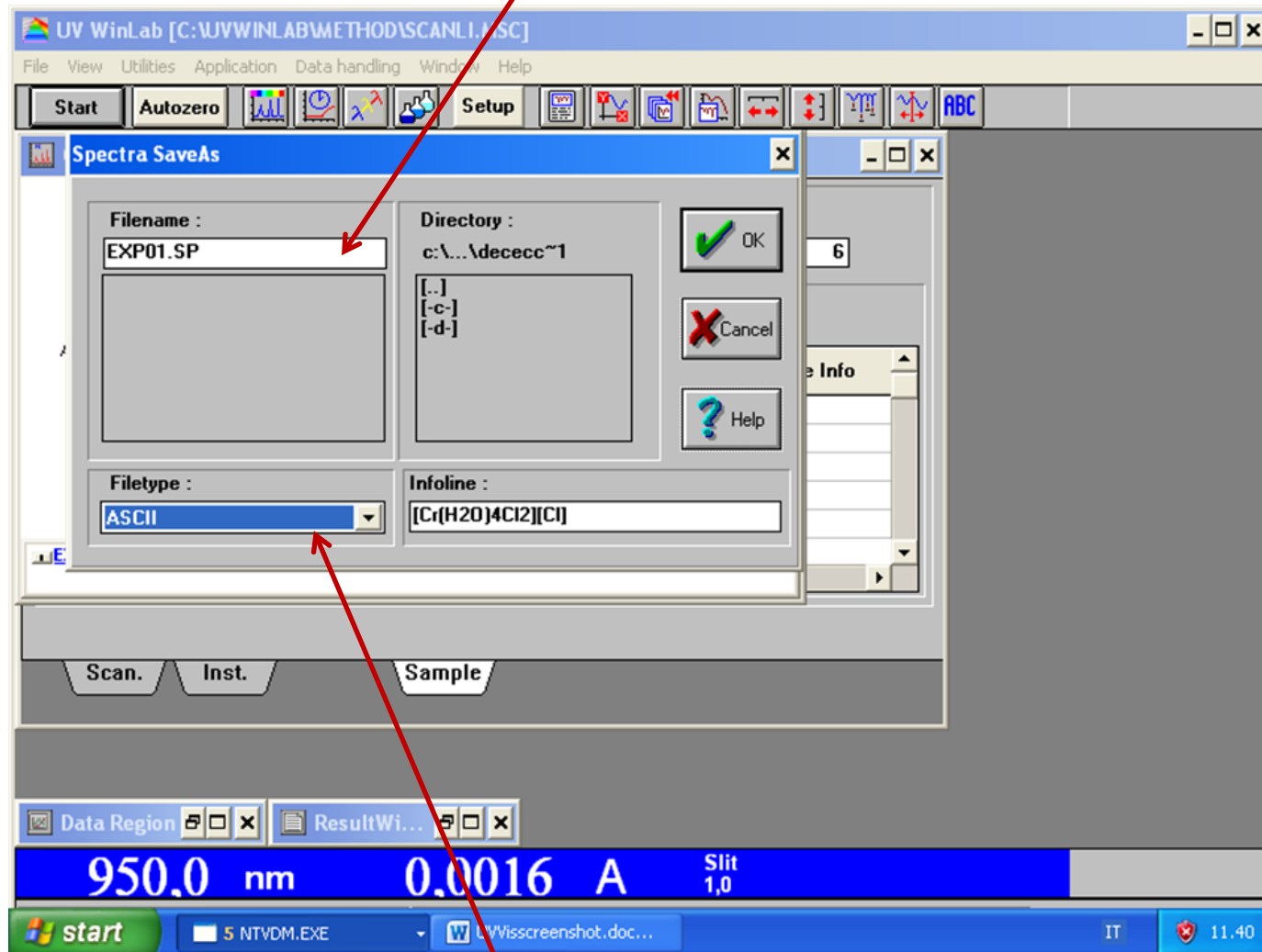
SALVARE I FILE DEGLI SPETTRI REGISTRATI

- ✓ Andare in file – **save as**;
- ✓ Scegliere la directory in cui salvare il file;
- ✓ LabInorg_Milani – LabInorg2020 - **gruppo ...** - il vostro cognome



SALVARE I FILE DEGLI SPETTRI REGISTRATI

- ✓ Il software vi propone il **nome del file** che avete impostato all'inizio



- ✓ Selezionate l'estensione **ASCII** dal menù tendina

ELABORAZIONE DEGLI SPETTRI REGISTRATI

- ✓ Impostare i valori di ascissa e ordinata, cliccando su

The screenshot shows the UV WinLab software interface. The main window title is "UV WinLab [C:\UVWINLAB\METHOD\SCANLI.MS...]" and the menu bar includes "File", "View", "Utilities", "Application", "Data handling", "Window", and "Help". The toolbar contains icons for "Start", "Autozero", "Setup", and "Format Graph". A red arrow points to the "Format Graph" icon. The "Format Graph" dialog box is open, showing the "Abscissa Range" (Left: 330.00, Right: 950.00) and "Ordinate Range" (Top: 1.000, Bottom: 0.000). The dialog also has "Aurorance" checkboxes, "Set Colors", "Set Grid", "OK", "Cancel", and "Help" buttons. The main window displays a graph with a blue bar at the bottom showing "950.0 nm" and "0.0017 A". The status bar at the bottom shows the Windows taskbar with the start button, taskbar icons for "5 NTVDM.EXE" and "UVWisscreenshot.doc...", and system tray icons for "IT" and "11.41".

ELABORAZIONE DEGLI SPETTRI REGISTRATI

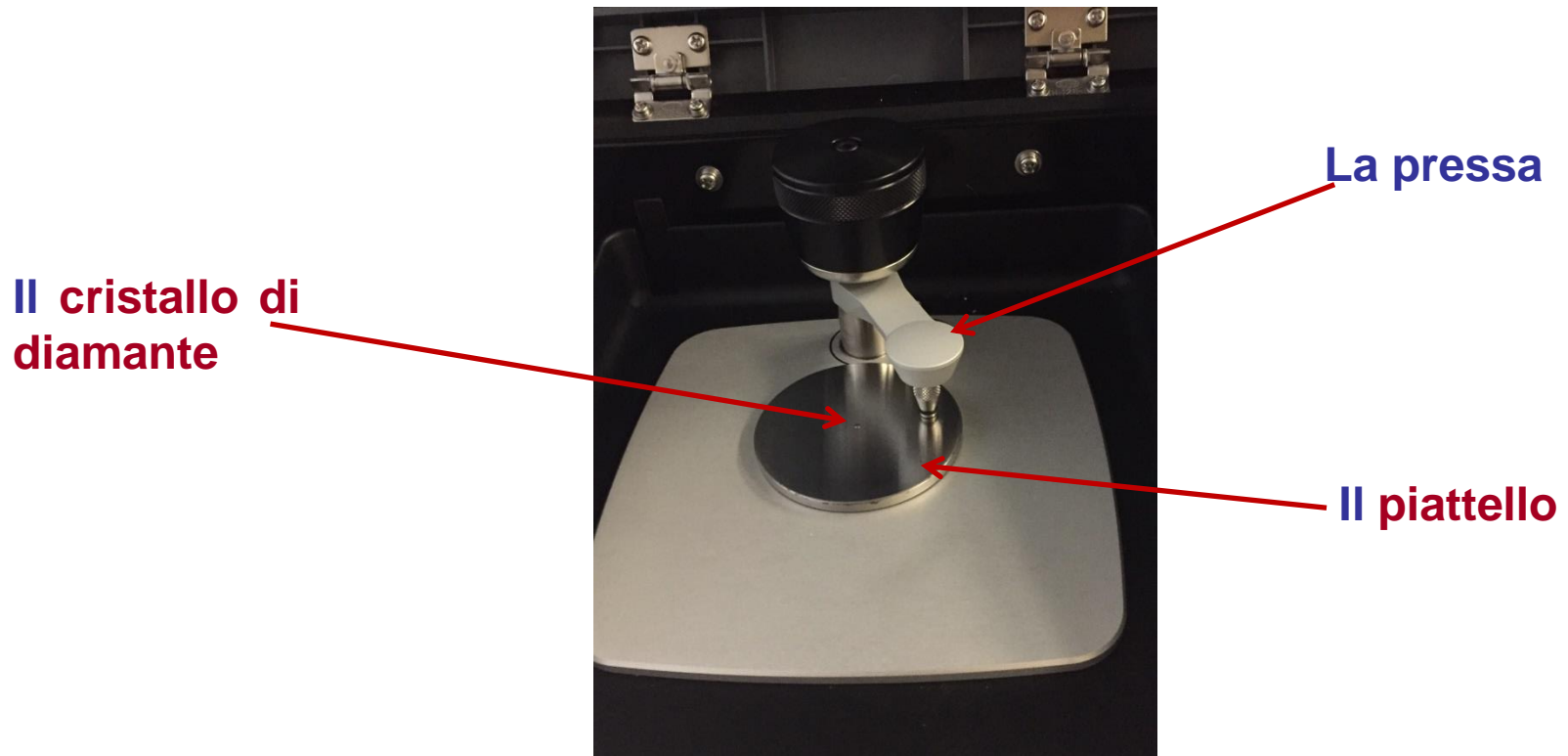
- ✓ Impostare il valore **soglia** per individuare un massimo di assorbimento, cliccando su

The screenshot displays the UV WinLab software interface. The main window shows a graph titled 'Graph1' with the y-axis labeled 'A' (Absorbance) ranging from 0.00 to 1.00 and the x-axis ranging from 330.0 to 400.0. A 'Find peaks' dialog box is open, allowing the user to set parameters for peak detection. The dialog box includes the following fields and options:

- Dataset:** EXP01.SP
- Threshold:** 0.100
- Abscissa start:** 950.00
- Abscissa end:** 330.00
- Label:** Peak, Base, Both
- Display:** Abscissa, Ordinate, Both

Buttons for 'OK', 'Cancel', and 'Help' are also present. The status bar at the bottom shows the current wavelength as 950.0 nm, absorbance as 0.0018 A, and slit width as 1.0. The Windows taskbar at the bottom shows the start button, taskbar with '5 NTVDM.EXE' and 'UVWisscreenshot.doc...', and system tray with 'IT' and '11.43'.

LO SPETTROFOTOMETRO FTIR-ATR



Il campione:

- ✓ **SOLIDO**: si macina la polvere, la si posiziona sul cristallo di diamante, la si schiaccia con la pressa;
- ✓ **LIQUIDO**: si posiziona una goccia di liquido molto piccola sul cristallo di diamante, **NON** la si schiaccia con la pressa; **ATTENZIONE** ai solventi clorurati.

ESECUZIONE DELL'ESPERIMENTO

- ✓ **Portare nello stanzino:**
 - Il campione solido o liquido;
 - La spatolina;
- ✓ **Registrare la **linea di base**;**
- ✓ **Registrare lo **spettro del campione**.**

I PARAMETRI

The screenshot displays the Spectrum software interface for a measurement. The main window is titled "Spectrum (DESKTOP-MB0T4VS-Instrument1 - Operator) - [Measurement]".

Top Panel: Includes icons for Open, Save, Print, Measurement, View, Search, and Edit Printform. It also features dropdown menus for "Data Processing" (Derivative, Peak Pick) and "Easy Macro" (Add Macros...).

Menu Bar: File, Edit, View, Graph, 2Dim, Tool, Window, Help.

Left Panel (Tree View): Shows the file structure for "LastBkg.ispd", including "Active Data: LastBkg", "LastBkg", and "C:\LabSolutions\LabSolutionsR\Data\SPETTRI DSCF\provamilani". Under "provamilani", there are sub-items for Properties, Interferogram, Background Interferogram, Peak Pick Table, and Second derivative.

Control Panel: Contains buttons for "BKG Scan", "Sample Scan", and "Monitor". It also has "Load Parameters", "Save Parameters", and "Instrument" buttons. A "Help" button and a "Switch to View after scanning" checkbox are also present. Below these are checkboxes for "View background" (checked), "Monitor autoscale" (checked), and "Continuous" (unchecked). The "Continuous" setting is set to "1 times" with a "Rest time:" field.

Parameter Fields: "Filename:" is set to "C:\LabSolutions\LabSolutionsR\Data\SPETTRI DSCF\pr...". "Auto increment" is unchecked, "Option" is "QATR-10 DIAMOND". "Sample name:" and "Sample ID:" fields are empty.

Main Plot Area: A large empty grid for the spectrum. The y-axis is labeled "%T" and ranges from 95.0 to 115.0. The x-axis is labeled "cm-1" and ranges from 4000 to 400.

Right Panel (Status/Parameters): Shows "Humidity", "Lamp", and "Laser" status as "S1101SC00275". Below this are "More Data" and "Advanced Instrument" tabs. Under "Advanced Instrument", "Measurement Mode" is "%Transmittance", "Apodization" is "Happ-Genzel", "No. of Scans" is 20, "Resolution" is 4, "Range (cm-1)" is set to "Min: 400" and "Max: 4000".

Status Log (Bottom Left): A list of system events including "FTIR Measurement ready", "SetParameters OK", "Scan requested", "Measurement stopped", "Data stored as default background spectrum", and "Data Processing: Derivative, Order=2, Points=9, Origin".

Bottom Bar: Shows the Windows taskbar with the search bar "Scrivi qui per eseguire la ricerca" and the system tray displaying the time "12:15" and date "04/11/2020".

I PARAMETRI

	<input type="checkbox"/> Humidity	
	<input type="checkbox"/> Lamp	
	<input type="checkbox"/> Laser	
	<input type="checkbox"/> S1101SC00275	
	<hr/>	
	<input type="button" value="More"/>	<input type="button" value="Advanced"/>
	<input type="button" value="Data"/>	<input type="button" value="Instrument"/>
	Measurement Mode	
	<input type="button" value="%Transmittance"/>	
	Apodization	
<input type="button" value="Happ-Genzel"/>		
No. of Scans		
<input type="button" value="20"/>		
Resolution		
<input type="button" value="4"/>		
Range (cm-1)		
Min.	<input type="button" value="400"/>	
Max.	<input type="button" value="4000"/>	

REGISTRAZIONE DELLA LINEA DI BASE

Si fa con la sola
aria.

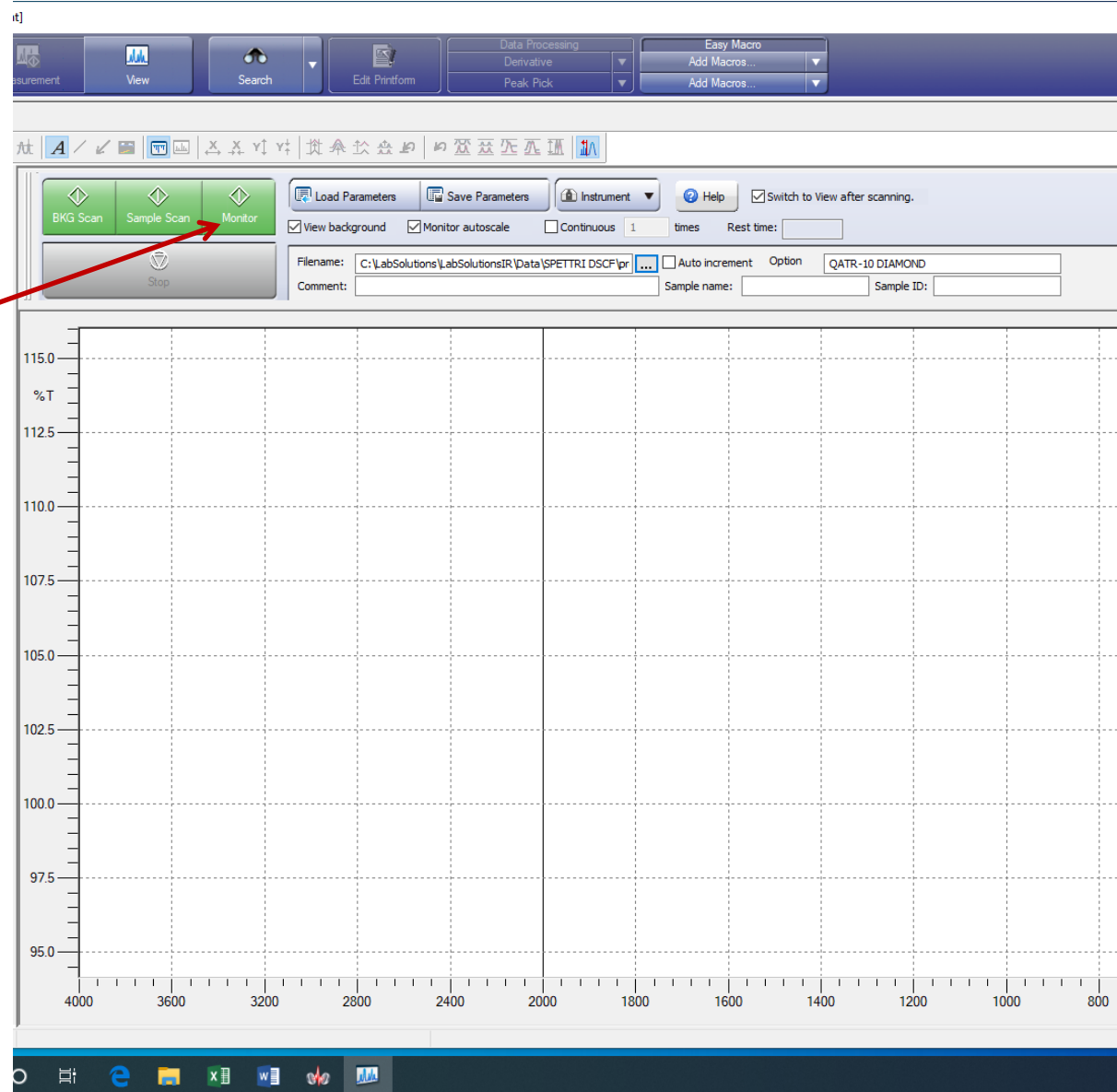
Cliccare su **BKG**
Scan

The screenshot displays the software interface for recording a baseline. At the top, there is a menu bar with options like 'View', 'Search', and 'Edit Printform'. Below the menu bar is a toolbar with various icons. The main control area contains three green buttons: 'BKG Scan', 'Sample Scan', and 'Monitor'. A red arrow points to the 'BKG Scan' button. To the right of these buttons are controls for 'Load Parameters', 'Save Parameters', and 'Instrument'. Below these are checkboxes for 'View background' and 'Monitor autoscale', and a 'Continuous' option set to '1 times'. A 'Rest time' field is also present. The 'Filename' field is set to 'C:\LabSolutions\LabSolutionsIR\Data\SPETTRI DSCF\pr...' and the 'Option' field is set to 'QATR-10 DIAMOND'. The 'Comment' and 'Sample name' fields are empty. The 'Sample ID' field is also empty. Below the control area is a large plot area with a grid. The y-axis is labeled '%T' and ranges from 95.0 to 115.0. The x-axis ranges from 4000 to 800. The plot area is currently empty.

REGISTRAZIONE DELLO SPETTRO DEL CAMPIONE DA ANALIZZARE

Mettere il campione sul cristallo di diamante e schiacciarlo con la pressa.

Cliccare
Monitor
su

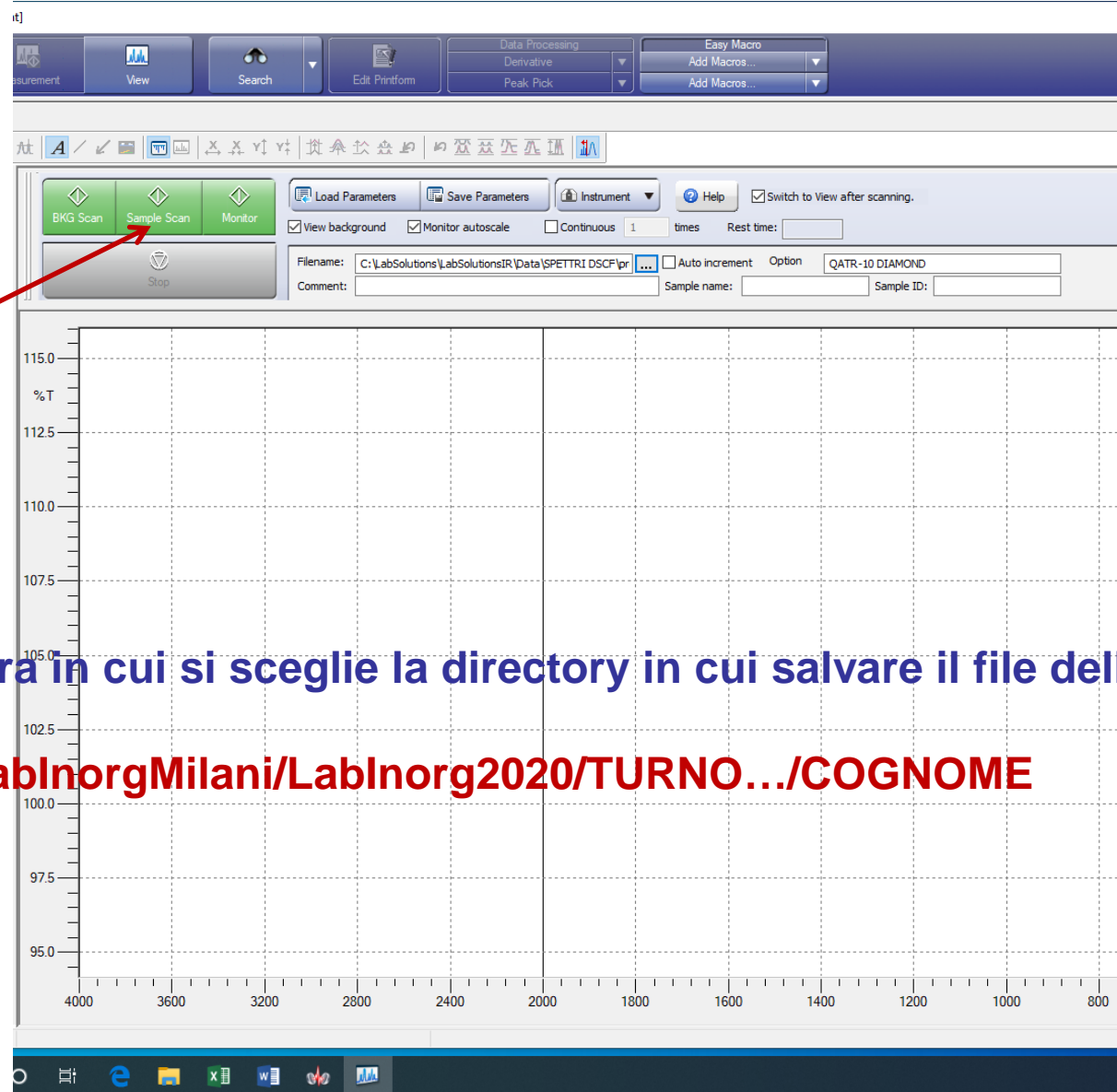


REGISTRAZIONE DELLO SPETTRO DEL CAMPIONE DA ANALIZZARE

Mettere il campione sul cristallo di diamante e schiacciarlo con la pressa.

Cliccare su
Sample Scan

- ✓ Si apre una finestra in cui si sceglie la directory in cui salvare il file dello spettro che è:
- ✓ **SPETTRI DSCF/LabInorgMilani/LabInorg2020/TURNO.../COGNOME**



ELABORAZIONE DEGLI SPETTRI REGISTRATI

- ✓ cliccando con il mouse si seleziona lo spettro
- ✓ con il mouse tenendo premuto il tasto sinistro e spostandosi sullo spettro si definisce la zona spettrale da ingrandire;
- ✓ per vedere i **valori di numeri d'onda dei picchi**:
- ✓ si clicca sull'icona in basso **move to peak screen**
- ✓ si seleziona **autocursor** compare il cursore e con il mouse lo si posiziona sul minimo del picco che interessa e compare un martelletto si clicca sul mouse e viene selezionato quel picco e scritto il valore di numero d'onda corrispondenti;

SALVARE I FILE DEGLI SPETTRI REGISTRATI

- ✓ per salvare lo spettro come ASCII
- ✓ si sceglie **file_export**
- ✓ si seleziona ASCII e si sceglie la directory e il file name
- ✓ per salvare (stampare) lo spettro come pdf
- ✓ si va in **File – View - Print Preview**: si apre una finestra e nella barra Title si scrive il file name
- ✓ si clicca su **stampa** e si apre la solita finestra in cui si sceglie la directory dove salvarlo e si scrive il file name (lo stesso scritto in Title)

Terminata la misura **PULIRE MOLTO MOLTO BENE** con una salvietta imbevuta o di acetone o di acqua:

Il **crystallo di diamante**: attenzione a non graffiarlo;

Il piattello;

La **punta della pressa**.

Tenere lo **spettrometro in monitor** per vedere quando il tutto è pulito.