

USER GUIDE FOR GR-RESQ APP

Who is a *User*?

User refers to any user of the web application. *Users* can do the following:

- 1) can submit their experiments and set visibility and ownership of the same.
- 2) can be part of different experiment groups and can submit experiments only visible to the group.
- 3) can query for experiments based on substrate, properties, environmental conditions, author, and furnace.
- 4) can view public experiments, ones submitted by themselves, or those made visible to the groups they are part of.
- 5) can view their profile information like name, institution, email, and password.

Who is an *Author*?

- *Author* refers to the author of the experiment.
- All *Users* have an *Author* profile created when they sign up.
- If a *User* is deleted, they remain as an *Author* of the experiments that they submitted. Their *Author* profile is not removed.
- Any *User* can select an *Author* profile while submitting experiments and can submit experiment on the behalf of other *Authors*. For example, **A** signed up as *User* and submitted EXP-EA and EXP-EB. **A** was then removed. If any other *User* in **A**'s group wants to submit **A**'s experiments, they can select **A** as an *Author* while submitting the experiment. **A** loses access to the web tool when the *User* profile is deleted. **A**, however, remains in *Author* database.

Who is the *Admin*?

- *Admin* refers to the person who has access to all experiments and user data and manages the tool. Only *Admin* has the privilege to create, read, update and delete any data.

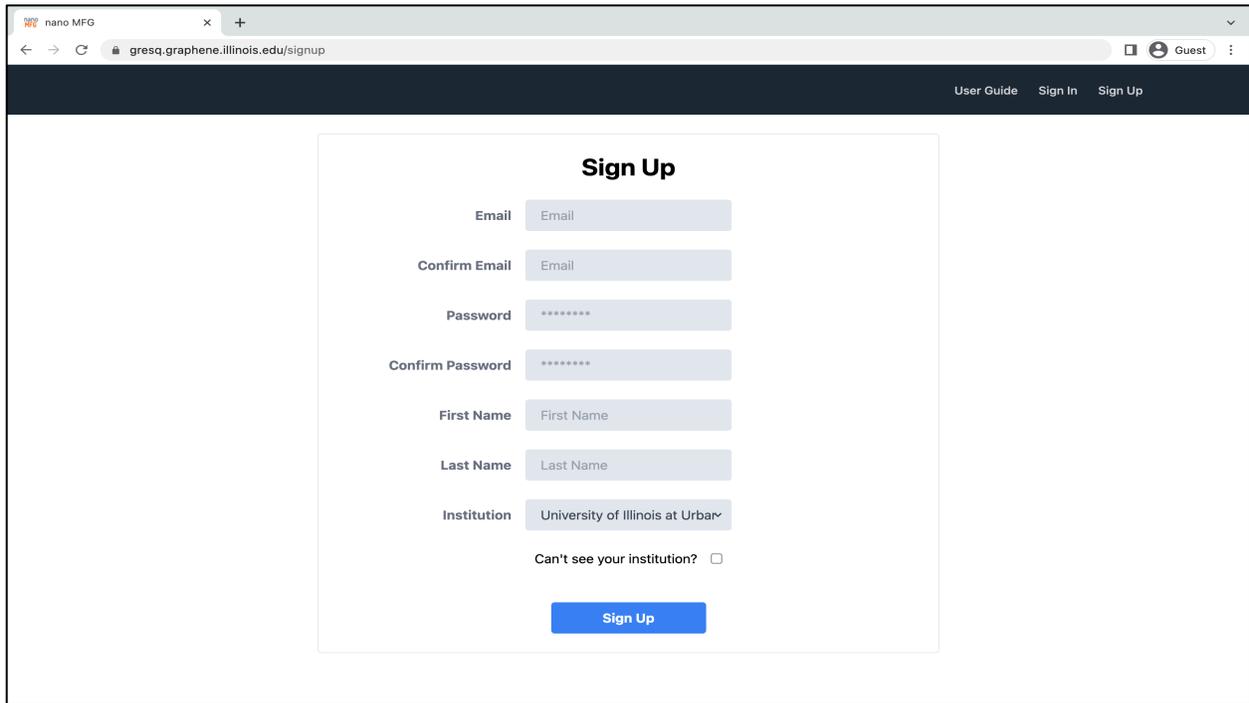
What does a *Group* mean?

- A *Group* enables its members to share their data.
- *Group Moderator*: Has the privilege to update/delete experiments in their group and modify permissions of the members.
- *Group Member*: Can access the experiments submitted by other members in the group. For example, **A**, **B**, **C** belong to GRP-ONE. They can see each other's experiments that are made visible to their *Group*.

You need to complete the below steps to sign up as a new *User*. After signing up, please contact the admin/group manager to be added to group/s.

I. Sign Up As A New User

Figure 1 Sign Up Page



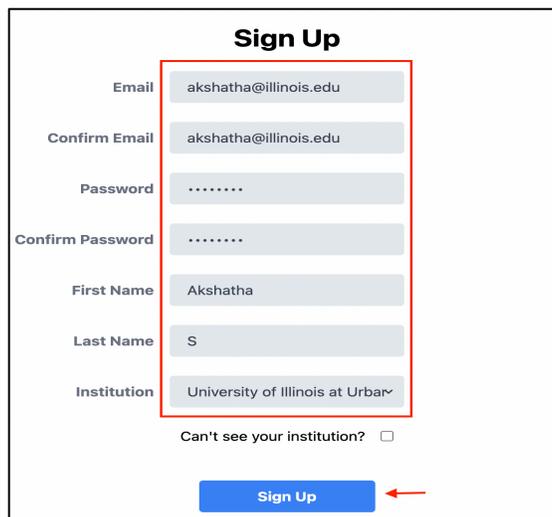
The screenshot shows a web browser window with the URL `gresq.graphene.illinois.edu/signup`. The page title is "Sign Up". The form contains the following fields:

- Email: [Empty text input]
- Confirm Email: [Empty text input]
- Password: [Empty password input]
- Confirm Password: [Empty password input]
- First Name: [Empty text input]
- Last Name: [Empty text input]
- Institution: [Dropdown menu showing "University of Illinois at Urbar"]

Below the fields is a checkbox labeled "Can't see your institution?" and a blue "Sign Up" button.

Enter your details: **university/institution email, password, first name, last name** and select your **institution** from the dropdown menu.

Figure 2 Enter New User Details



The screenshot shows the same "Sign Up" form with the following details entered:

- Email: `akshatha@illinois.edu`
- Confirm Email: `akshatha@illinois.edu`
- Password: [Redacted]
- Confirm Password: [Redacted]
- First Name: `Akshatha`
- Last Name: `S`
- Institution: [Dropdown menu showing "University of Illinois at Urbar"]

A red box highlights the Email, Confirm Email, Password, Confirm Password, First Name, and Last Name fields. A red arrow points to the blue "Sign Up" button.

Note: Password must be minimum 8 characters with at least one uppercase letter, one lowercase letter, one digit and one special character.

Figure 3 Dropdown to Select Institution

The image shows a registration form with several input fields: Password, Confirm Password, First Name, Last Name, and Institution. A dropdown menu is open for the Institution field, displaying a list of institutions. The 'University of Illinois at Urbana-Champaign' is selected and highlighted in blue. The other institutions listed are Chinese Academy of Sciences, Gachon University, Korea Electronics Technology Institute, Korea Institute of Science and Technology, Northeastern University, Oxford Instruments Asylum Research, Peking University, Sejong University, Sungkyunkwan University, Texas Instruments, and Tsinghua University.

If you cannot see your institution, select the checkbox, and enter your institution name.

Figure 4 Enter New Institution

The image shows the registration form with the 'Last Name' and 'Institution' fields. The 'Institution' field contains the text 'New Institution'. A red box highlights the 'Can't see your institution?' checkbox, which is checked. A blue 'Sign Up' button is located below the form.

On successful registration of new user, you will see below alert box.

Figure 5 Sign Up Successful

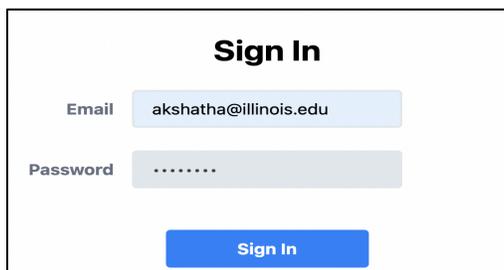
The image shows the sign-in page with 'Email' and 'Password' fields and a 'Sign In' button. A white alert box is overlaid on the page, titled 'GrResq App Alert'. The message inside the alert box says 'Signed Up. Please sign in'. There is a blue 'Close' button at the bottom of the alert box.

Sign up will fail if the email id is already registered or the password does not match the criteria. If the sign up fails for any other reason, please refresh and try again.

II. Sign In for Existing Users

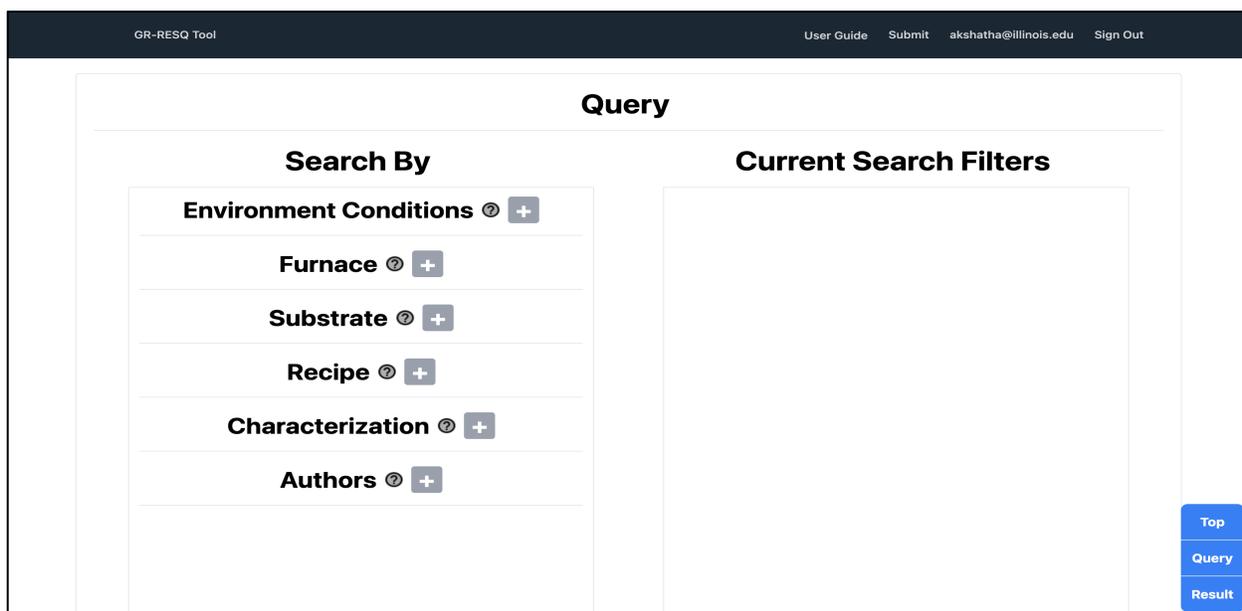
Enter your username, password and sign in to query/submit experiments.

Figure 6 Sign In



The sign-in form is titled "Sign In" and contains two input fields: "Email" with the value "akshatha@illinois.edu" and "Password" with a masked value ".....". Below the fields is a blue "Sign In" button.

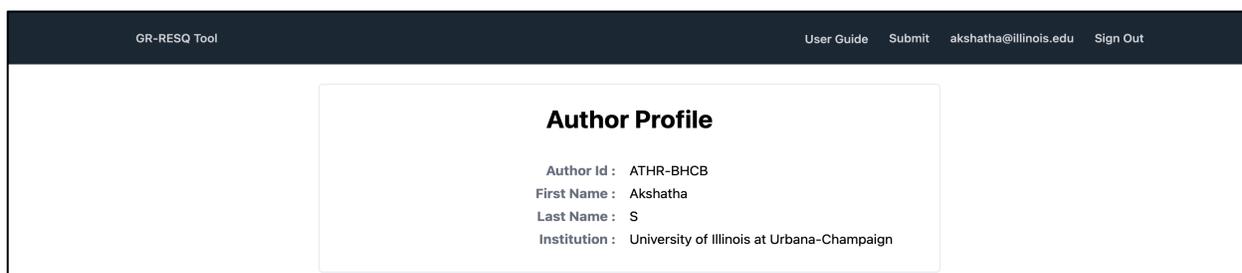
Figure 7 Landing Page after sign in



The landing page is titled "Query" and features a navigation bar with "GR-RESQ Tool", "User Guide", "Submit", "akshatha@illinois.edu", and "Sign Out". The main content area is divided into two columns: "Search By" and "Current Search Filters". The "Search By" column lists categories with expandable options: Environment Conditions, Furnace, Substrate, Recipe, Characterization, and Authors. The "Current Search Filters" column is currently empty. A vertical sidebar on the right contains "Top", "Query", and "Result" buttons.

When you click on your email id, you can view your profile. You can view your **author id**.

Figure 8 Profile Page



The profile page is titled "Author Profile" and displays the following information: Author Id: ATHR-BHCB, First Name: Akshatha, Last Name: S, and Institution: University of Illinois at Urbana-Champaign. The page includes the same navigation bar as the query page.

Note: Refreshing the page after signing in will automatically sign out. DO NOT REFRESH.

III. Submitting Experiment

After sign in, you can click on “Submit” on the top.

Figure 9 Submitting new experiment

GR-RESQ Tool User Guide Submit akshatha@illinois.edu Sign Out

Submit New Experiment Data

Material Name Graphene

Environment Conditions

I will upload new Environment Conditions

Environment Conditions Number Select

Furnace

I will upload a new Furnace

Furnace Number Select

Substrate

I will upload a new Substrate

Substrate Number Select

Properties

I will upload new Properties

Properties Number Select

Recipe

I will upload a new Recipe

Recipe Number Select

Authors

Author #ATHR-BHCB X

Name : Akshatha S
Institution : University of Illinois at Urbana-Champaign

Author Number Select Add Author

SEM File(s)
Choose Files No file chosen

RAMAN File(s)
Choose Files No file chosen

Visibility Select PRIVATE PUBLIC

Submit

If a user does not belong to any group, they can set visibility of experiment to be private (only them) or public (any user can query the experiment). They cannot set the owner of the experiment. Owner will be set to their author id.

Once the user is part of one/more groups, they can select the group they want to submit the experiment to as the owner. They can set visibility to private/public/group (visible to members of their group only).

Figure 10 Select ownership and visibility

Owner

- ✓ akshatha-uiuc
- tawfick-uiuc

Visibility

GROUP

Select pre-existing experimental/recipe parameters from the dropdowns or upload new ones by selecting the check box.

Figure 11 Upload new environment conditions

Environment Conditions

I will upload new Environment Conditions

Ambient Temperature °C

Dew Point °C

Save

Figure 12 New environment condition saved

GrResq App Alert

Environment Conditions Saved with ID
ENVCOND-E4IC

Close

You can select the check box and upload new data for Environment Conditions. Remember to click “**Save**” before clicking submit experiment. Similarly, you can save new Substrate.

Figure 13 Upload new Property

Properties

I will upload new Properties

Average Thickness of Growth nm

Std. Dev. of Growth nm

Number of Layers

Growth Coverage %

Domain Size um²

Figure 14 Upload new Substrate

Substrate

I will upload a new Substrate

Catalyst

Thickness mm

Diameter mm

Length mm

Surface Area mm²

Save

Note: There is no Save button for Property. It gets saved when you Submit experiment.

For Furnace and Recipe, you can set *owner*, *visibility* and list of *authors* like how you set it for experiment. For Recipe, you can add Preparation Steps one by one and then “Save” recipe.

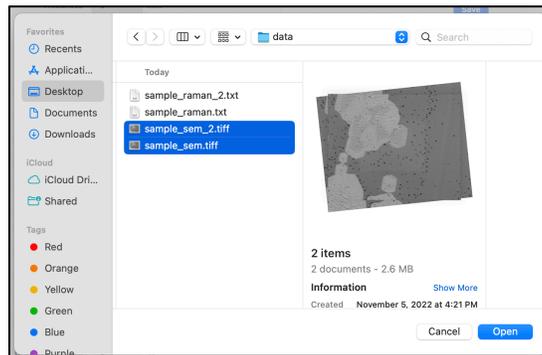
Figure 13 Upload new Furnace

Figure 14 Upload new Recipe

Figure 15 Preparation Step added

Upload Raman and Scanning Electron Microscopy (SEM) files related to the experiment.

Figure 16 Uploading SEM files



You can add multiple authors to the experiment.
Select author id from the dropdown and click on Add Author.
Click on the red “X” if you want to remove author from your experiment.

Figure 17 Adding multiple authors while submitting the experiment

Authors

Author #akshatha@illinois.edu X
Name : Akshatha S
Institution : University of Illinois at Urbana-Champaign

Author #ATHR-J2U X
Name : Aagam Shah
Institution : University of Illinois at Urbana-Champaign

Author #ATHR-J2T X
Name : Mitisha Surana
Institution : University of Illinois at Urbana-Champaign

Author Number ATHR-J2T ▼ Add Author

After successful submission, you can note down the experiment id for future reference.

Figure 18 Experiment Submission Successful

Submit New Experiment Data

Material Name Graphene ▼

Environment Conditions
 I will upload new Environment Conditions
Environment Conditions Number ENVCOND-SJ2 ▼

Furnace
 I will upload a new Furnace
Furnace Number FRNC-JYR ▼

Substrate
 I will upload a new Substrate
Substrate Number SUB-AA ▼

Properties
 I will upload new Properties
Properties Number PRP-AA ▼

Recipe
 I will upload a new Recipe
Recipe Number RCP-AA ▼

Authors
Author #akshatha@illinois.edu X
Name : Akshatha S
Institution : University of Illinois at Urbana-Champaign
Number ATHR-J2A ▼ Add Author

SEM File(s)
Choose Files No file chosen

RAMAN File(s)
Choose Files No file chosen

Visibility PRIVATE ▼

Submit

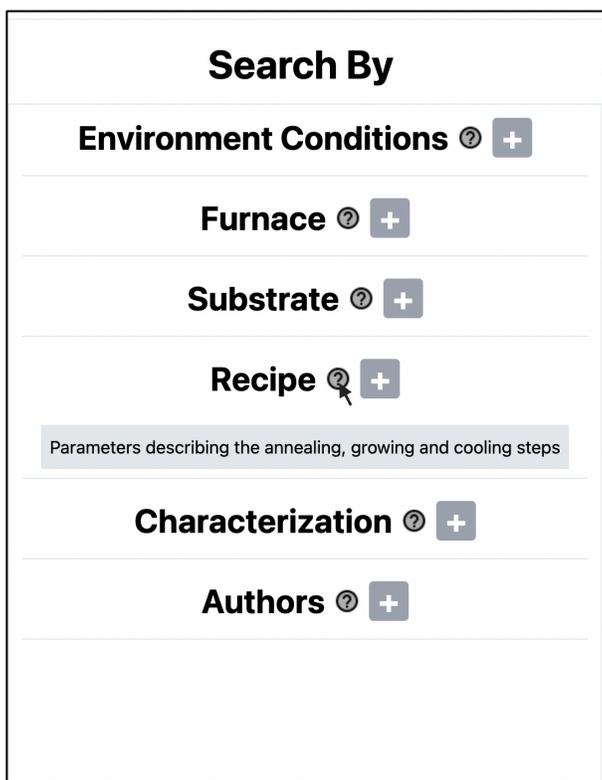
GrResq App Alert
Experiment Submitted with ID EXP-ESPS ←
Close

IV. Querying Experiments

Note: You will be able to see experiments submitted by you, those which are public and those submitted by members of any group that you are a part of.

You can view a one-line description of the parameters in each filter section by moving the mouse pointer on question mark icon.

Figure 19 Search Filters



You can click on the + (plus) icon to expand the search parameter.

Select the parameter from dropdown and select its value using min-max or dropdown. In min-max, using the arrows, you can adjust the number with 0.01 precision. Otherwise, you can clear the value and enter on your own.

Click Add to add the filter to current search filter.

You can add multiple filters.

If a filter is already added, it will not let you add another filter for the same parameter again. Click on red “X” of a filter under “current search filters” if you want to remove a filter.

Figure 20 Search Parameters

The image shows two side-by-side panels for search parameters. The left panel is titled "Environment Conditions" and contains a dropdown menu for "OPTION" with "Ambient Temperature (°C)" selected. Below it are input fields for "MIN" (0) and "MAX" (20.01), and a blue "Add" button. The right panel is titled "Substrate" and contains a dropdown menu for "OPTION" with "Catalyst" selected. Below it is a list for "CATALYST" with "Copper" checked and other options: Nickel, Palladium, Palladium leaf, and Platinum.

You can type author name or institution in the provided text box. As you type each letter, the tool will filter out authors displayed to you. Click on the green + (plus) icon to add the author to current search filter.

Figure 21 Search by Author

The image shows the "Authors" search interface. It has a title "Authors" with a help icon and a minus sign. There are two input fields: "Name" with "Mitish" entered and "Institution" which is empty. Below these is a list of results. The first result is "Author #ATHR-J2T" with a green plus icon. The details for this author are: Name: Mitisha Surana, Institution: University of Illinois at Urbana-Champaign.

Figure 22 Search Filters

Current Search Filters

Ambient Temperature (°C) ✕

Min : 0
Max : 20

Catalyst ✕

Value : Copper

Author ✕

Name : Mitisha Surana
Institution : University of Illinois at Urbana-Champaign

Search Experiments

Review added filters and click on Search Experiments. Then click on Go to Results to view.

Current Search Filters

Ambient Temperature (°C) ✕

Min : 0
Max : 20

Catalyst ✕

Value : Copper

Author ✕

Name : Mitisha Surana
Institution : University of Illinois at Urbana-Champaign

Search Experiments **Go to Results**

Figure 23 Query Result

Query Result								
EXPERIMENT ID	FURNACE ID	SUBSTRATE ID	NO. OF LAYERS	GROWTH COVERAGE (%)	AUTHOR	CARBON SOURCE	AMBIENT TEMPERATURE (°C)	CATALYST
EXP-CV	FRNC-JYY	3c71fc79-62c1-4176-a021-0af57c825cc3			Mitisha Surana	CH4	10	Copper
EXP-DP	FRNC-JYZ	05227128-cb27-497d-b6b5-fdbc925ad68			Mitisha Surana	CH4	10	Copper
EXP-DS	FRNC-JYZ	05227128-cb27-497d-b6b5-fdbc925ad68			Mitisha Surana	CH4	10	Copper
EXP-DT	FRNC-JYZ	05227128-cb27-497d-b6b5-fdbc925ad68			Mitisha Surana	CH4	10	Copper
EXP-J2J	FRNC-JYZ	05227128-cb27-497d-b6b5-fdbc925ad68			Mitisha Surana	CH4	10	Copper
EXP-J2U	FRNC-JYZ	05227128-cb27-497d-b6b5-fdbc925ad68			Mitisha Surana	CH4	10	Copper

You can click on the experiment id (blue hyperlink) to view the experiment in detail.

Figure 24 Experiment Detail Page

Experiment EXP-J2U

Details

Authors

Author #ATHR-J2T

Name : Mitisha Surana
Institution : University of Illinois at Urbana-Champaign

Environment Condition #ENVCOND-BHDQ

Ambient Temperature : 10 °C
Dew Point : -

Furnace #FRNC-JYZ

Tube Diameter : 25.4 mm
Cross Sectional Area : 506.707 mm²
Tube Length : 1000 mm
Length of Heated Region : -

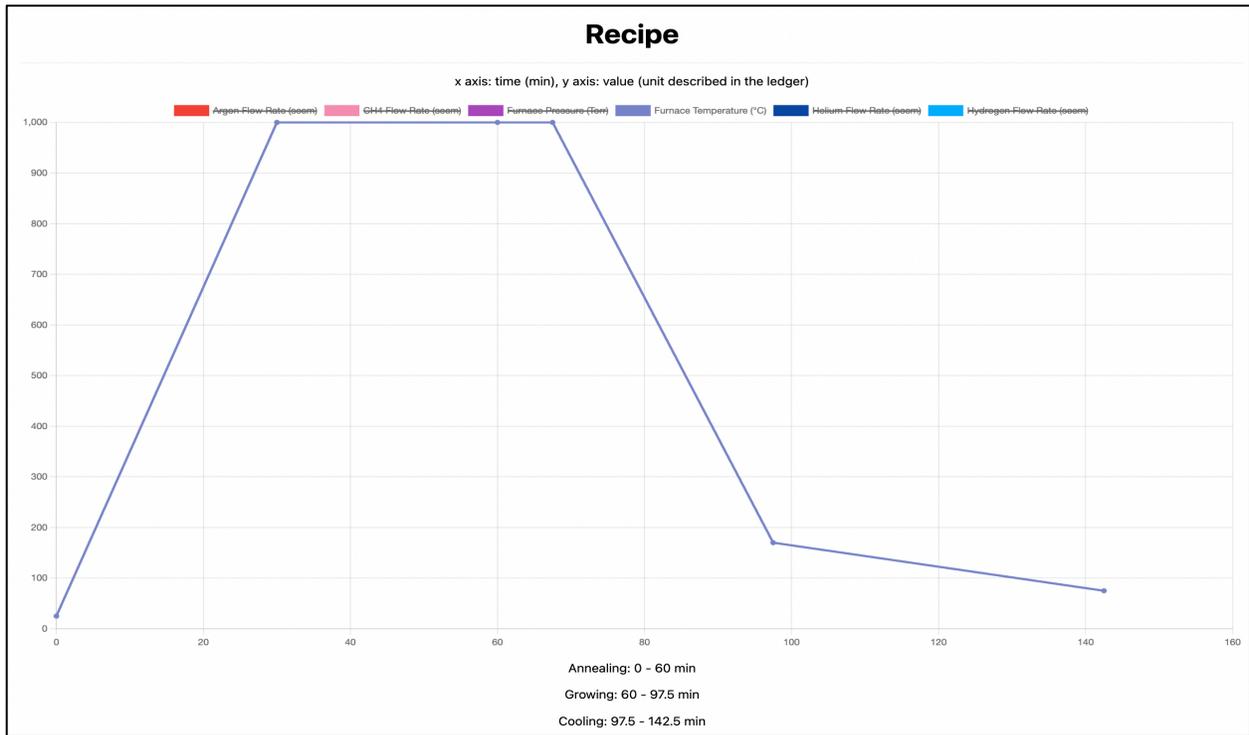
Substrate #SUB-AA

Catalyst : Copper
Thickness : 25 um²
Diameter : -
Length : -
Surface Area : 150 um

Property #PRP-DL

Top
Detail
Recipe
Raman
SEM

Figure 25 Graph



You can click on the strikethrough options to toggle the view of different data on the graph.

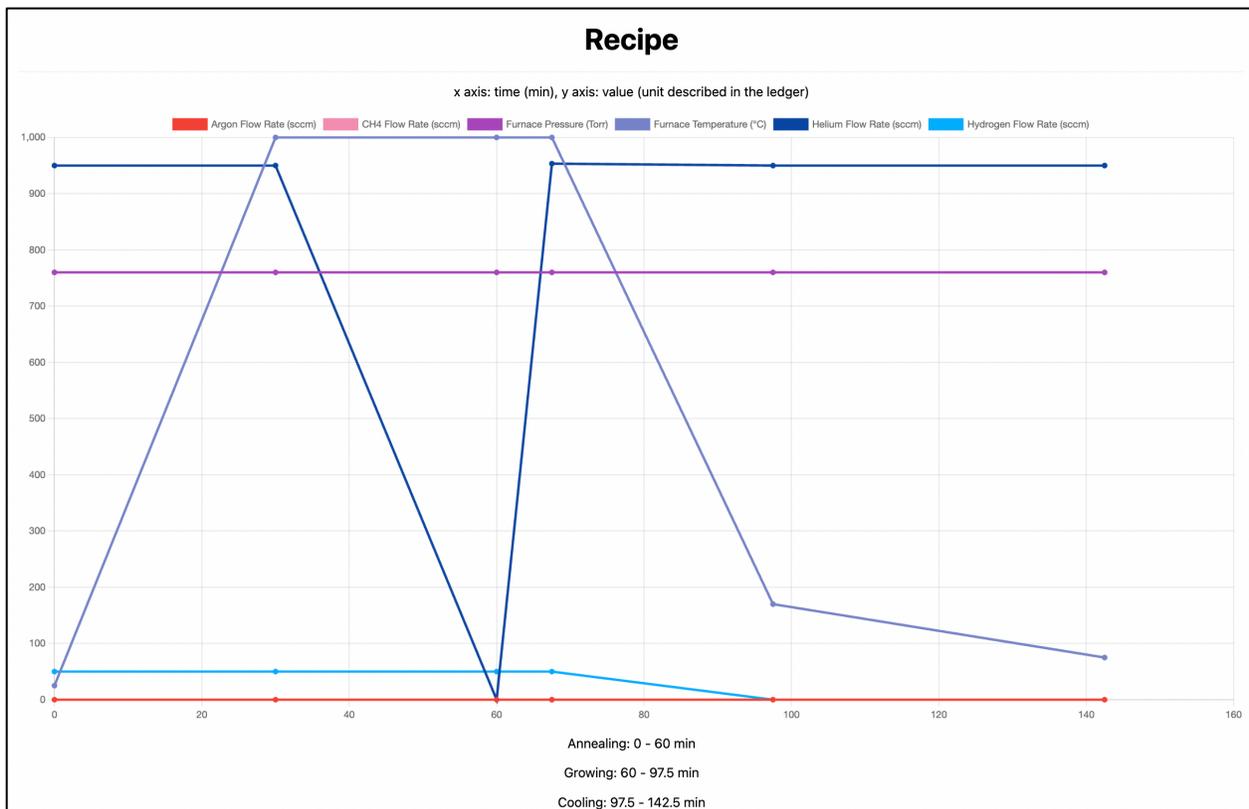


Figure 26 Raman Data

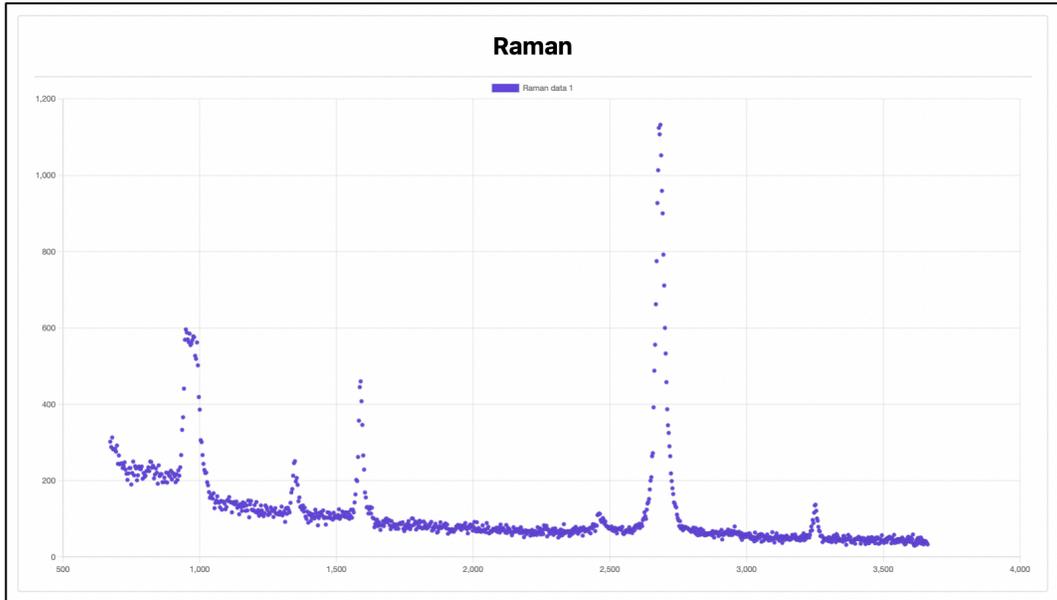


Figure 27 SEM Data

