

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 fields are:

- Email: Email
- Confirm Email: Email
- Password: *****
- Confirm Password: *****
- First Name: First Name
- Last Name: Last Name
- Institution: University of Illinois at Urbana-Champaign

Below the institution field is a link "Can't see your institution? ". At the bottom is a blue "Sign Up" button.

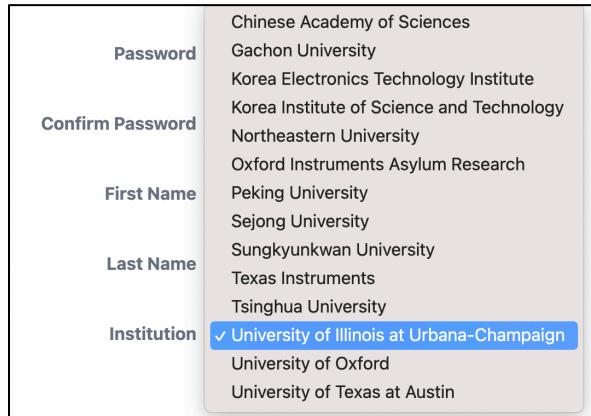
Enter your details: **university/institution email, password, first name, last name** and select your **institution** from the dropdown menu.

Figure 2 Enter New User Details

The screenshot shows the same "Sign Up" page as Figure 1, but with a red box highlighting the input fields for Email, Confirm Email, Password, Confirm Password, First Name, and Last Name. Below the institution field is a link "Can't see your institution? ". At the bottom is a blue "Sign Up" button with a red arrow pointing to it.

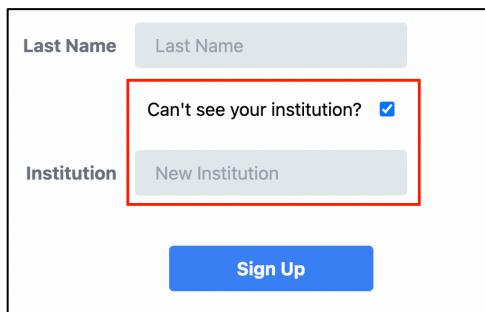
Note: Password must be minimum 8 characters with at least one uppercase letter, one lowercase letter, one digit and one special character.

Figure 3 Dropdown to Select Institution



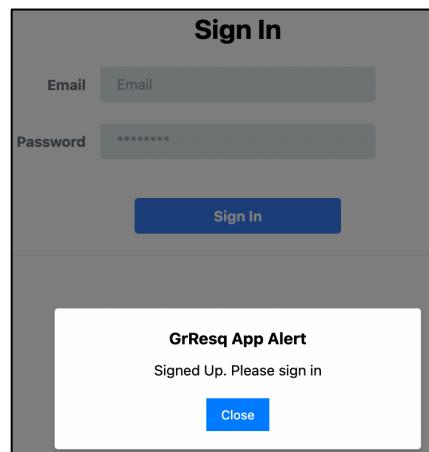
If you cannot see your institution, select the checkbox, and enter your institution name.

Figure 4 Enter New Institution



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

Figure 5 Sign Up Successful



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 form is titled "Sign In". It has two input fields: "Email" containing "akshatha@illinois.edu" and "Password" containing ".....". Below the fields is a blue "Sign In" button.

Figure 7 Landing Page after sign in

The landing page header includes "GR-RESQ Tool", "User Guide", "Submit", "akshatha@illinois.edu", and "Sign Out". The main area is titled "Query". It features a "Search By" section with dropdown menus for "Environment Conditions", "Furnace", "Substrate", "Recipe", "Characterization", and "Authors". To the right is a "Current Search Filters" section and a vertical sidebar with buttons for "Top", "Query", and "Result".

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 header includes "GR-RESQ Tool", "User Guide", "Submit", "akshatha@illinois.edu", and "Sign Out". The main content area is titled "Author Profile" and displays the following information:
Author Id : ATHR-BHCB
First Name : Akshatha
Last Name : S
Institution : University of Illinois at Urbana-Champaign

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

III. Submitting Experiment

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

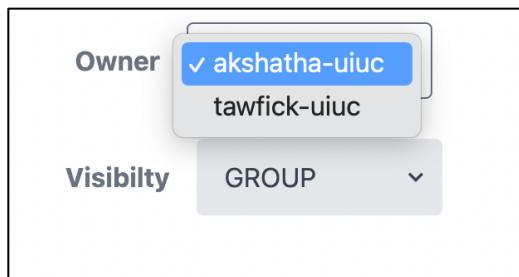
Figure 9 Submitting new experiment

The screenshot shows the 'Submit New Experiment Data' interface. At the top left is the 'GR-RESQ Tool' logo. Top right features 'User Guide', 'Submit', 'akshatha@illinois.edu', and 'Sign Out'. The main area has a title 'Submit New Experiment Data'. On the left, there are four sections: 'Environment Conditions' (Material Name dropdown set to 'Graphene'), 'Furnace' (Environment Conditions Number dropdown set to 'Select'), 'Substrate' (Furnace Number dropdown set to 'Select'), and 'Properties' (Substrate Number dropdown set to 'Select'). Each section includes an 'I will upload new...' checkbox. On the right, there's a 'Recipe' section with a checkbox for 'I will upload a new Recipe' and a dropdown for 'Recipe Number' set to 'Select'. Below it is an 'Authors' section showing 'Author #ATHR-BHCB' (with an 'X' button), 'Name : Akshatha S', and 'Institution : University of Illinois at Urbana-Champaign'. It also includes 'Author Number' and 'Add Author' dropdowns. At the bottom right is a 'Submit' button.

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



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

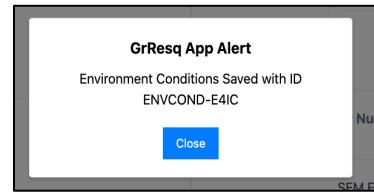
I will upload new Environment Conditions

Ambient Temperature °C

Dew Point °C

Save

Figure 12 New environment condition saved



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

Furnace

I will upload a new Furnace

Tube Diameter: 10 mm

Cross Sectional Area: 20 mm²

Tube Length: 30 mm

Length of Heated Region: 40 mm

Author #ATHR-5JR X

Name : test user
University of Illinois at Urbana-Champaign

Author Number: ATH-
Add Furnace Author

Visibility: PRIVATE ▼

Save

Figure 14 Upload new Recipe

Recipe

I will upload a new Recipe

Carbon Source: CH4

Base Pressure: 0 Torr

Preparation Steps

Name: **Annealing** ✓

Duration: Growing Cooling 1 min

Furnace Temperature: 0 °C

Furnace Pressure: 0 Torr

Sample Location: 0 mm

Helium Flow Rate: 0 sccm

Hydrogen Flow Rate: 0 sccm

Carbon Source Flow Rate: 0 sccm

Argon Flow Rate: 0 sccm

Cooling Rate: 0 °C / min

Add Preparation Step

Author Number: Select ▼ **Add Recipe Author**

Visibility: PRIVATE ▼

Save

Figure 15 Preparation Step added

Recipe

I will upload a new Recipe

Carbon Source: CH4

Base Pressure: 760 Torr

Preparation Steps

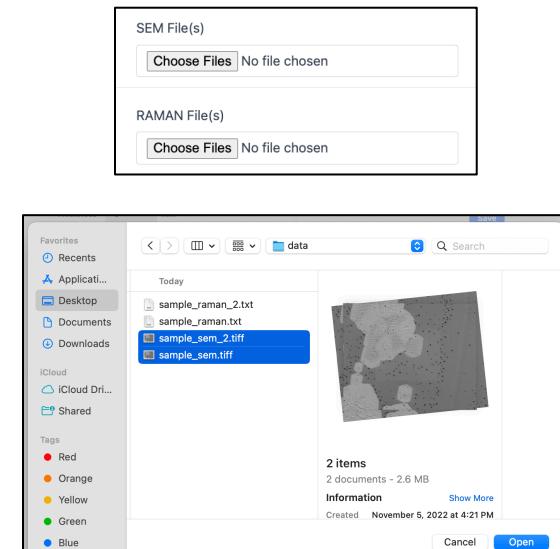
Preparation Step #1 X

| | |
|---------------------------|-------------|
| Name : | Annealing |
| Duration : | 1 min |
| Furnace Temperature : | 10 °C |
| Furnace Pressure : | 760 Torr |
| Sample Location : | 10 mm |
| Sample Location : | 10 mm |
| Helium Flow Rate : | 10 sccm |
| Hydrogen Flow Rate : | 20 sccm |
| Carbon Source Flow Rate : | 20 sccm |
| Argon Flow Rate : | 10 sccm |
| Cooling Rate : | 10 °C / min |

Name: Growing

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

Figure 16 Uploading SEM files



SEM File(s)

Choose Files 2 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 | |
| <input type="checkbox"/> I will upload new Environment Conditions Environment Conditions Number ENVCOND-BJ2 | |
| Furnace | |
| <input type="checkbox"/> I will upload a new Furnace Furnace Number FRNC-JYR | |
| Substrate | |
| <input type="checkbox"/> I will upload a new Substrate Substrate Number SUB-AA | |
| Properties | |
| <input type="checkbox"/> I will upload new Properties Properties Number PRP-AA | |
| Recipe <input type="checkbox"/> 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) <input type="button" value="Choose Files"/> No file chosen | |
| RAMAN File(s) <input type="button" value="Choose Files"/> No file chosen | |
| Visibility PRIVATE | |
| Submit | |

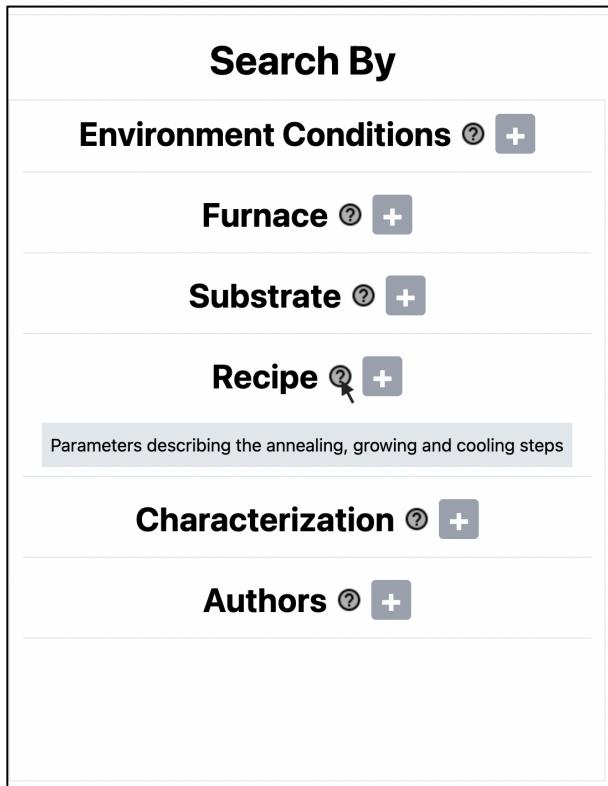
OrReq App Alert
Experiment Submitted with ID EXP-ESPS [Close](#)

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 screenshot shows two search panels side-by-side. The left panel, titled "Environment Conditions", has an "OPTION" dropdown set to "Ambient Temperature (°C)" with a range slider from 0 to 20.01. The right panel, titled "Substrate", has an "OPTION" dropdown set to "Catalyst" and a list of catalysts: Copper, Nickel, Palladium, Palladium leaf, and Platinum, with Copper checked.

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 screenshot shows a search interface for authors. It has fields for "Name" (containing "Miti") and "Institution". Below these, a card displays "Author #ATHR-J2T" with "Name : Mitisha Surana" and "Institution : University of Illinois at Urbana-Champaign". A green "+" button is visible next to the author's name.

Figure 22 Search Filters

Current Search Filters

| | |
|--|---|
| Ambient Temperature (°C) | X |
| Min : 0 | |
| Max : 20 | |
| Catalyst | X |
| Value : Copper | |
| Author | X |
| 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) | X |
| Min : 0 | |
| Max : 20 | |
| Catalyst | X |
| Value : Copper | |
| Author | X |
| Name : Mitisha Surana | |
| Institution : University of Illinois at Urbana-Champaign | |

Search Experiments

Go to Results

Figure 23 Query Result

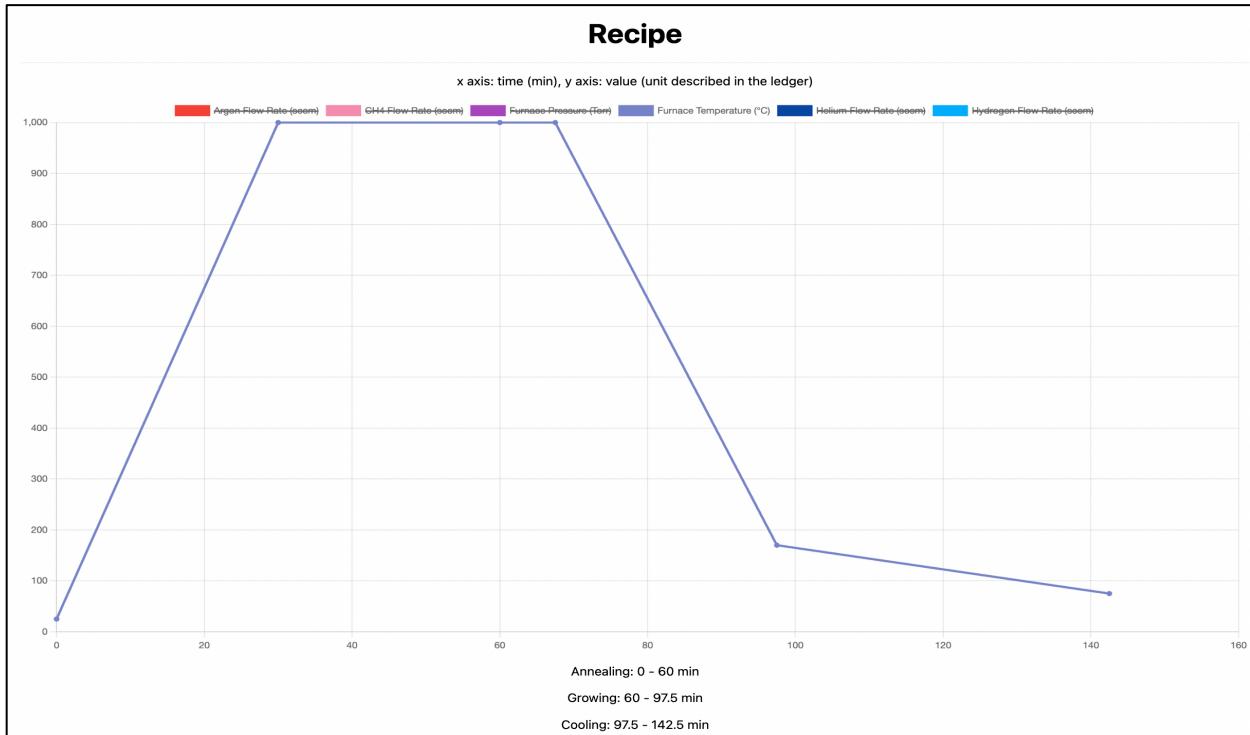
| Query Result | | | | | | | | |
|-------------------------|------------|--------------------------------------|---------------|---------------------|----------------|---------------|--------------------------|----------|
| EXPERIMENT ID | FURNACE ID | SUBSTRATE ID | NO. OF LAYERS | GROWTH COVERAGE (%) | AUTHOR | CARBON SOURCE | AMBIENT TEMPERATURE (°C) | CATALYST |
| EXP-CV | FRNC-JYY | 3c7fc79-62c1-4176-a021-0af57c825cc3 | - | - | Mitisha Surana | CH4 | 10 | Copper |
| EXP-DP | FRNC-JYZ | 05227128-cb27-497d-b6b5-ffdbc925ad68 | - | - | Mitisha Surana | CH4 | 10 | Copper |
| EXP-DS | FRNC-JYZ | 05227128-cb27-497d-b6b5-ffdbc925ad68 | - | - | Mitisha Surana | CH4 | 10 | Copper |
| EXP-DT | FRNC-JYZ | 05227128-cb27-497d-b6b5-ffdbc925ad68 | - | - | Mitisha Surana | CH4 | 10 | Copper |
| EXP-J2J | FRNC-JYZ | 05227128-cb27-497d-b6b5-ffdbc925ad68 | - | - | Mitisha Surana | CH4 | 10 | Copper |
| EXP-J2U | FRNC-JYZ | 05227128-cb27-497d-b6b5-ffdbc925ad68 | - | - | 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

The screenshot shows the GR-RESQ Tool Experiment Detail Page for EXP-J2U. The page has a header with the title "Experiment EXP-J2U". Below the title is a "Details" section. On the left, there are sections for "Authors", "Environment Condition #ENVCOND-BHDQ", "Furnace #FRNC-JYZ", "Substrate #SUB-AA", and "Property #PRP-DL". On the right, there is a vertical sidebar with buttons for "Top", "Detail", "Recipe", "Raman", and "SEM", with "Detail" being the active tab. The "Authors" section shows "Author #ATHR-J2T" with "Name : Mitisha Surana" and "Institution : University of Illinois at Urbana-Champaign". The "Environment Condition" section shows "Ambient Temperature : 10 °C" and "Dew Point : -". The "Furnace" section shows "Tube Diameter : 25.4 mm", "Cross Sectional Area : 506.707 mm²", "Tube Length : 1000 mm", and "Length of Heated Region : -". The "Substrate" section shows "Catalyst : Copper", "Thickness : 25 um²", "Diameter : -", "Length : -", and "Surface Area : 150 um". The "Property" section is currently empty.

Figure 25 Graph



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

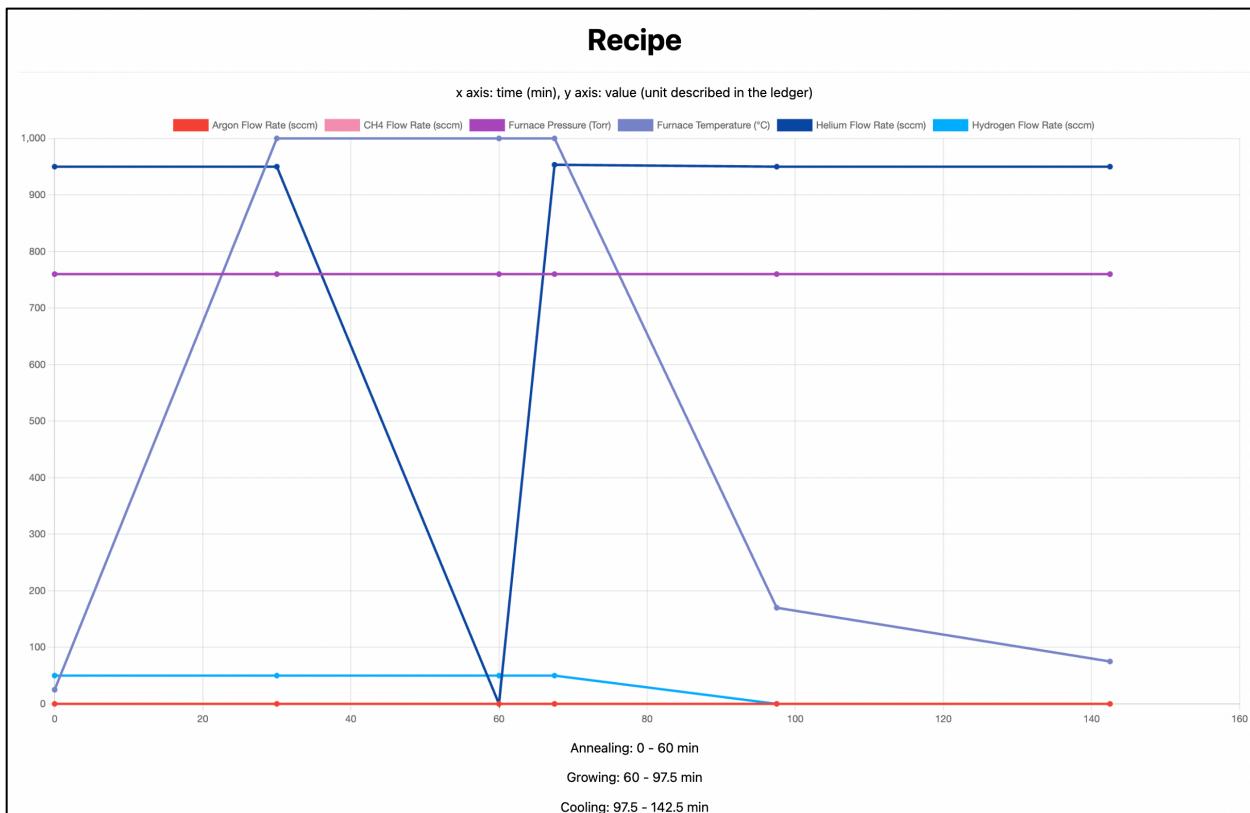


Figure 26 Raman Data

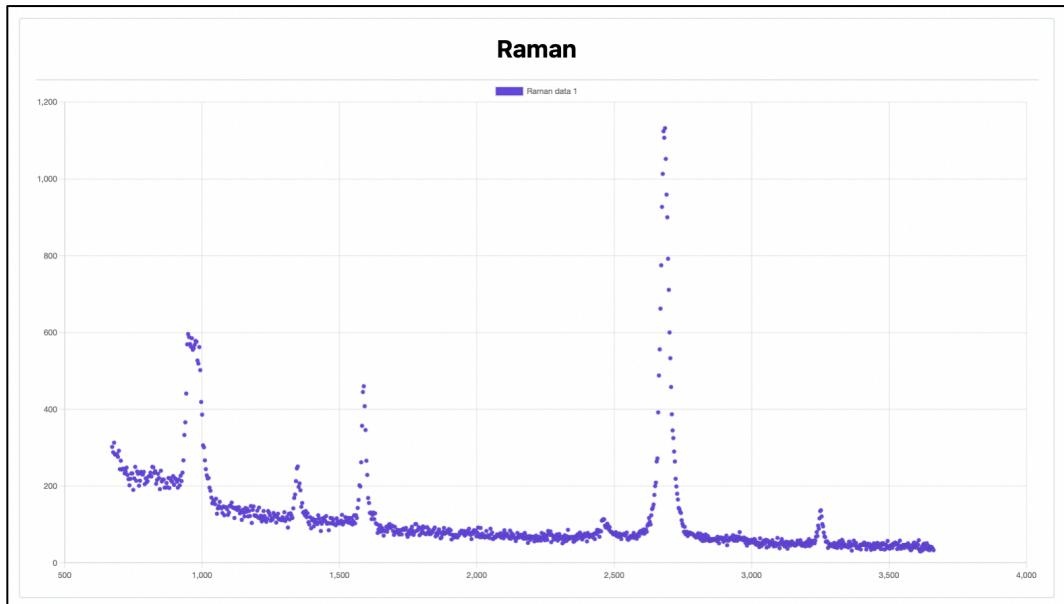


Figure 27 SEM Data

