Welcome to the AW SpectraCoat Studio

AW SpectraCoat Studio allows you to design, simulate, and analyze thin-film optical coatings effortlessly. Follow the steps below to understand how to use the tool effectively.

1. Account Creation and Login

Creating an Account

- To get started, create an account if you don't already have one.
- Ensure you use a valid email address as it will be linked to your designs.

Logging In

• Once your account is created, log in to access the studio features.



2. Explore Available Materials

Material List

• After logging in, you'll be taken to the material list page. This page displays all the materials available in our database.

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Preview Materials

• Each material has a **Preview** button. Click it to view its properties, such as refractive index (n) and extinction coefficient (k), across different wavelengths.

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3. Upload a New Material

When to Upload?

• If the material you want to use isn't available in the material list, you can upload your own.

How to Upload

• Click on the **Upload New Material** button.

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- Ensure the material file is in CSV format with the following columns:
 - 1. Wavelength (in nm)
 - 2. Refractive Index (n)
 - 3. Extinction Coefficient (k)

Where Are Uploaded Materials Stored?

• Uploaded materials are saved in the **Uploads Folder**, where you can access them.

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4. Set Up Environment

• Navigate to the **Setup Environment** page to configure simulation variables.



- Here, you can adjust:
 - Start Wavelength and End Wavelength for your simulation.
 - Glass Thickness to customize the substrate.

Home Load V All Designs Help	Welcome, Nonel Logout
Welcome to the AW SpectraCoat Studio Please provide the following details to proceed with the simulation: Start Wavelength (nm): 30 End Wavelength (nm): 1080 Glass Thickness (nm): \$20000 Theta (degrees): 0 Incoherence: 1000	

5. Stack Simulation

Adding Front and Back Layers

• **Front Layers**: Click **Add Front Layer** to select a material from the dropdown and input the desired thickness.



• **Back Layers**: Similarly, click **Add Back Layer** to add materials to the back of your stack.



6. Calculate TRA Performance

• Once your stack is defined, click the **Calculate** button to compute and display the **Transmittance (T)**, **Reflectance (R)**, and **Absorptance (A)** (TRA) of your design.



7. Create a Stack Visualization

- Click **Create Stack** to visualize your stack design with all layers represented. The visualization will include:
 - Front layers.
 - Glass substrate.
 - Back layers.

Create Stack					
Stack Design Visualization					
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8. Analyze Graphical Results

View Individual Graphs

- Navigate to Results to view:
 - Transmittance Graph: Displays only the transmittance curve.
 - Reflectance Graph: Displays only the reflectance curve.



9. Interactive Simulation

Real-Time Thickness Adjustment

• Click Interactive Simulation to open a modal where you can adjust the thicknesses of individual layers.

• Observe real-time changes in the TRA performance as you tweak layer thicknesses.



Applying Changes

• If you find an optimized thickness combination during the simulation, click Apply Changes. The updated thickness values will reflect in your main design.

10. Save Your Design

How to Save

- Enter a Design Name in the input field.
- Select the visibility of your design:
 - Public: Visible to all users.
 - Private: Accessible only to you.

Home Load ▼ <u>Save</u> Downloads	▼ Results ▼ All Designs	s Help				Welcome, None! Logout
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What Can Be Saved?

• Save your stack design, TRA results, and environment settings to the database.

11. Download Design Data

Download Options

- You can export your design data in various formats:
 - Graph (JPEG): Download the TRA graph as an image.
 - Data (CSV): Export numerical results for further analysis.
 - Data (PDF): Save results in a printable document.
 - Design (JSON): Save the entire design configuration.



12. Load a Previously Saved Design

How to Load a Design

• Click Load > Open Design to view a list of saved designs in your database.

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- Each design has:
 - A View button to preview details.
 - A Load button to populate the fields in the editor.

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nd Wavelength: 1080 pm	1	



Theta: N/A degrees Incoherence: 1000

• Go to the All Designs page to view designs shared by other users.



- You can:
 - Preview any public design.

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	Public Designs	
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new_1 Saved by: bthapa@adaptivewaves.com		
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Ag Saved by: bthapa@adaptivewaves.com		
<u>test_design</u> Saved by: test@test.com		
demo Saved by: blhapa@adaptivewaves.com		

Close

• Apply a public design to your project.

demo

Saved by: bthapa@adaptivewaves.com

Front Materials: uploads/ITO_NEW.csv

Front Thicknesses: 100 nm

Back Materials: uploads/SiO2_UM.csv, uploads/ITO_NEW.csv

Back Thicknesses: 67, 78 nm

Glass Thickness: 320000 nm

Wavelength Range: 380 nm - 1080 nm

Theta: 0

Incoherence: 1000

Apply Design

Notes and Tips

- 1. Always enter a Design Name to save your work.
- 2. When uploading materials, double-check the CSV format and column headers.
- 3. Public designs are visible to all users, so ensure you select the right visibility before saving.