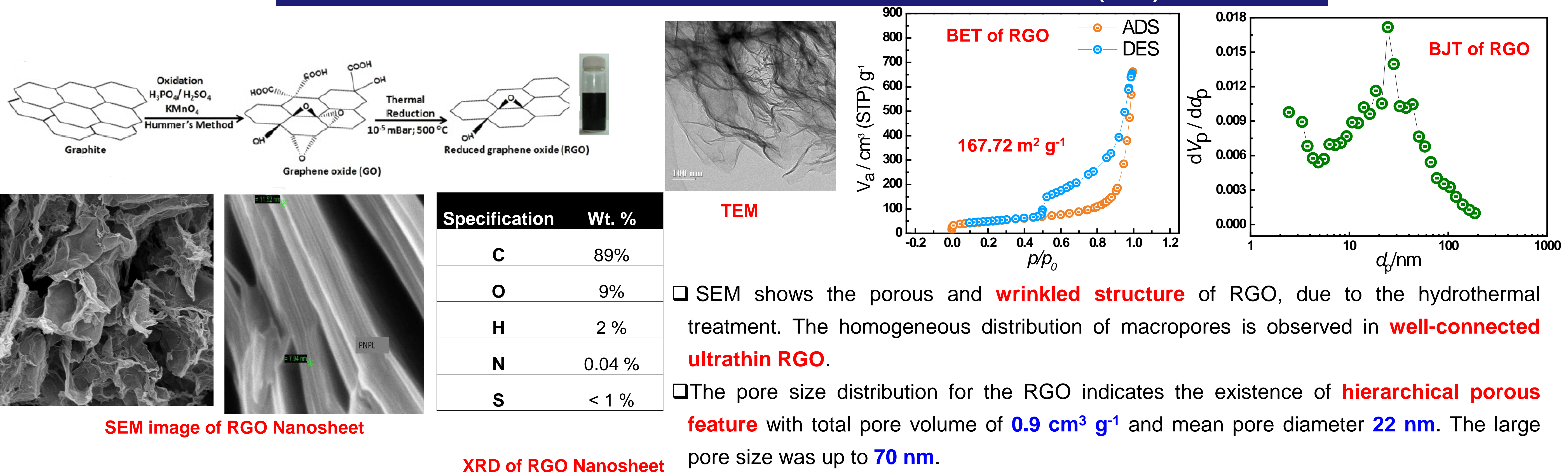


- ❖ **97 %** of the total available water resource is saline and only **2.6 %** is **freshwater resources** and out of this, only **1 %** can be accessible by **mankind for different applications**.
- ❖ Tremendous industrial growth and urbanization have exploited the fresh water resource extensively and scarcity of fresh water will be even worst in the upcoming years. Among all the continents, **Asia** is the **highest water consumer** and it consumes around **2780 billion m<sup>3</sup> / year** water. In these regards, there is a strong need to explore the alternate opportunity to fulfill the global demand for fresh water.
- ❖ **Solar desalination system** has enormous potential to fulfill the **global freshwater demand** in economic and environment friendly manner
- ❖ **Solar still can be an appropriate solution for potable water problem**

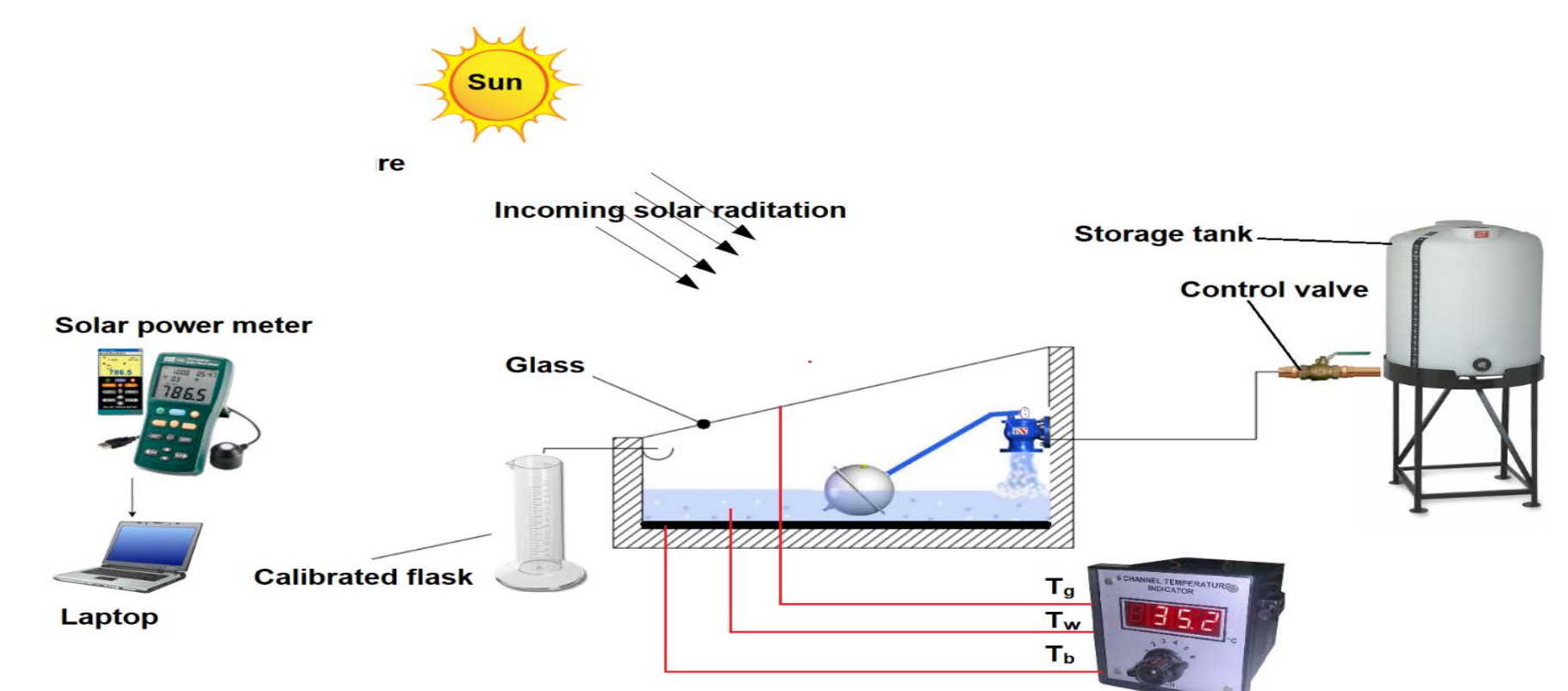
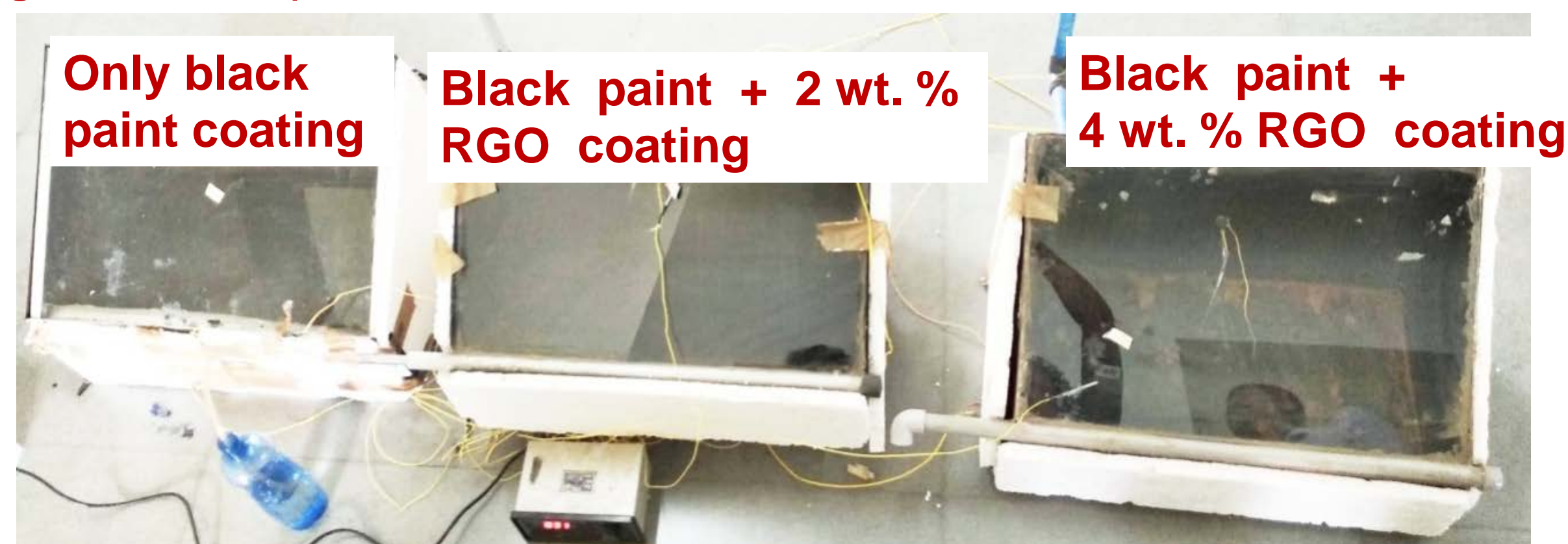
### PREPARATION AND CHARACTERIZATION OF REDUCED GRAPHENE OXIDE (RGO) NANOSHEET



### PREPARATION OF RGO PAINT AND EXPERIMENTAL SETUP

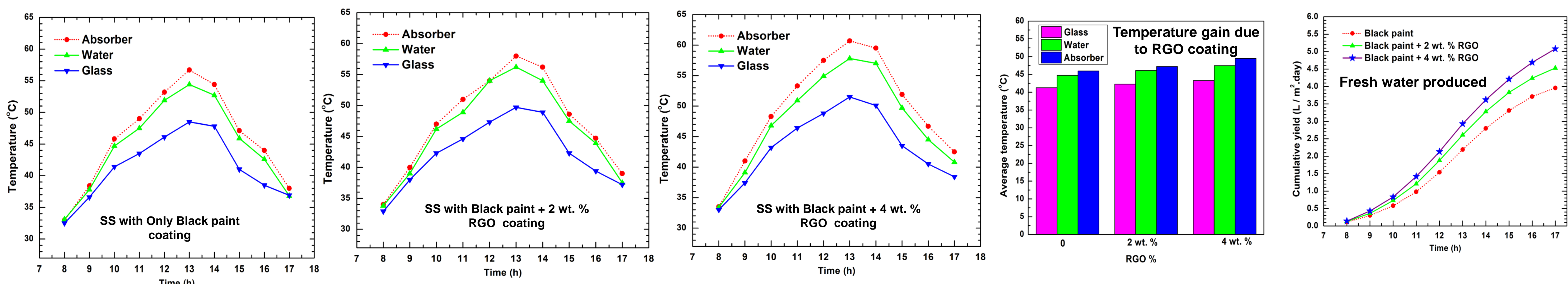
- RGO is taken in the weight ratio of **2 and 4 %**. **Black oil paint and turpentine (4:1)** along with RGO was mixed
- **Solution of RGO with black paint was stirred: 300 rpm, 1h** for achieving black nano-paint
- **Nanopaint coating- Spray gun (High volume, LP)**

- ❖ Metal Primer
- ❖ Gun nozzle: 1.4 mm
- ❖ Air Consumption : 6 CFM
- ❖ Sand paper : 220 – grit
- ❖ Drying Hour : 4 h



Temperature measurement across the absorber, glass and water in Solar Still

### EFFECT OF RGO COATING



- ❑ Solar radiation was least in the morning, increase steadily throughout the day, and attained a maximum value of  $1096 \text{ W/m}^2$  at 1 PM.
- ❑ SS with only black paint coated Absorber, the peak temperature of the **glass, water and absorber** was found to be **48.5 °C, 54.4 °C and 56.7 °C**, respectively.
- ❑ With 2 wt. % RGO, the maximum temperature of the **glass, water, and absorber** was **49.7 °C, 56.2 °C and 58 °C**, respectively.
- ❑ With 4 wt. % RGO, the maximum temperature of the **glass, water, and absorber** was **51.5 °C, 57.8 °C and 60.7 °C**, respectively
- ❑ Large pore size, leads to exceptional increase in absorption of solar radiation by the absorber and owing to the higher thermal conductivity of RGO, all the stored energy in the absorber is effectively transferred into the water at a faster rate.
- ❑ **SS with only black paint coated AP** shows the full day yield of **3.96 L/m<sup>2</sup>**. 2 wt. % and 4 wt. % RGO significantly augmented the yield by **14.4% and 28.3%**.