

**2021**  
November 01-02  
Webinar

## 38<sup>th</sup> Global Nanotechnology Congress

**Arpita Sarkar**

Brainware University, India

### Mesoporous Materials for Adsorption, Catalysis and Solar Cells.

Over the last few years mesoporous materials (pore size 2-50 nm) becomes one of the important areas of research due to their wide applications in adsorption, drug delivery, catalysis, imaging, sensors, gas capture and storage, energy conversion devices etc. Since the first inspiring invention of MCM41 in 1992 the variety of mesoporous materials encompassing a broad range of compositions have been explored. The pore structure of mesoporous materials affords an extremely large surface area with a large pore volume. Generally their high surface areas are relevant for surface or interface-related processes like adsorption, catalysis and energy storage and large pore volumes plays an important role in the loading of guest species. Beside this, they have several advantages such as variations of pore morphology, adjustable pore sizes. The pore size variation is important for the design of better porous catalysts, for large molecular separation, and for hosting quantum size objects. Uniform and tunable mesopore channels facilitate the transport of atoms and increases the accessibility of active sites. Another important aspect is their nanoconfinement effects in the voids of uniform mesochannels, which makes them advantageous in catalysis and energy storage. Nanometre-sized interconnected 3D porous networks can produce extraordinary nanoscale effects that result in mesoporous materials with unusual mechanical, electrical and optical properties. Mesoporous materials have thin pore walls and short channels that may considerably shorten the transport path of the electrons which make them beneficial for water splitting and solar cell devices.

### Biography

Arpita Sarkar is currently working as Assistant Professor and head in the Department of Chemistry of Brainware University, Kolkata, India. She completed her doctoral research in Chemistry from Indian Institute of Technology (IIT) Kharagpur, India. After that she worked as postdoctoral research associate in Korea Research Institute of Chemical Technology (KRICT), Republic of Korea for two years and as a research associate in the Department of Chemistry, Indian Institute of Technology (IIT) Delhi, India for one year. Her research works have been published in many peer reviewed high impact international journals.