

Cutting Edge Research in Advanced Materials to Transform the World

Dear Readers!

Introduction to Advanced Material

Advanced materials have proven to be the greatest need for every individual in the present era. These materials are the basis of modern scientific technology and works suitably in every sector. Material science uses the combination of both man-made and naturally occurring things and their utilization through science and technology. Material science is a very broad subject that uses techniques from every field of science to create a substance of much utility. Nanomaterial structures have become a common area of research for their special and unexpected applications in various fields. Nanotechnology plays a unique and the most important role in the field of advanced material manufacture. The applications of an advanced material may become a key to revolutionizing our lives in future.

There are many reasons that everyone is concentrating on advanced materials development and its applications. Some common examples are:

Low costs and high returns

Advanced materials possess several qualities such as they are stronger, lighter and more durable that allows them to last longer and save money on replacement.

Customer belief and loyalty

With the improved quality, advanced materials have become successful to fulfill customer requirements and contain lesser defects.

Sustainability and successful synthesis

Commercialization of advanced materials can help us tackle humanity's great challenges and even improve the human standards.

Advanced materials in medical field

Advanced Materials produces a wide range of components for use in medical instrumentations as well as tools for treatment and surgery.

Medical sciences demand the highest standards of precision, accuracy, reliability and performance for better living quality. Glass-ceramics are an important material proposed for bone repair, artificial dental roots and X-ray tubes. A very common material, titanium is extensively used in joint implants due to its corrosion resistance property and strength. Wearable pulsimeters



are also now in use that can measure blood pressure and heart rate quickly and easily.

Even artificial organs are becoming very useful and this is possible only with advancement in material technology.

Nanocomposites & industrial application

Composite materials have several advantages that is high resistance to corrosion, high strength and light weight due to which composites have led to their broad-spectrum applications. Due to the need to reduce vehicle weight, which directly affects fuel consumption and diminishes gases emission, composites have become very popular nowadays. It has an excellent thermal and mechanical properties which are the most useful criteria's in the industries.

Biosensors as advanced materials

Biosensing devices are used for the detection of a specific analyte that interacts with a biological component using a detector and finally recognizes an analyte in order to generate a signal. The biological component can be an enzyme, antibodies and DNA.

It consists of an analyte, sensory layers, transducers and a reading device. These parts form the bases for the device making it to perform a wide range of applications which ranges from clinical to environmental and agricultural. It has been widely used in the food industry too.

Today, Biosensors are useful almost in every field of study.

Glucose oxidase is a good example that a biosensor commonly uses.

Advance materials in our daily life

Best example are the polymers that are regularly used advanced materials, which can be find nearly in every material we use in our day to day life. Polymers have uses in almost every domain of science. Products made from polymers are all around us such as clothing made from man-made fibers, disposable cups, plastic materials, nylon fibers, paints, silicone valves, cookware's and many more. The list is almost innumerable. We are all surrounded by polymers. These materials have made human life much easier nowadays.

Information technology and advanced materials

Demand for electronic based products is driving rapid growth in the present days, and the emergence of new applications is changing our life standards. Familiar examples of advanced materials are there already such as silicon-based semiconductor devices, materials for nonvolatile memory, materials for on-chip interconnects and dielectrics.

So, we can now understand the value of advanced materials in almost every sector of life. One cannot imagine its life without these advanced materials. These materials have immense use in our lives.

With best regards

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