Graphene industrial application towards decarbonization

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Removal of 100 to 1,000 gigatonnes of CO2 this century may be needed to achieve deep decarbonization and avoid exceeding the 1.5°C climate target. Graphene materials and nanotechnology is playing key role. Graphene has found its use in numerous industrial applications due to its unique properties. While its impermeable and conductive nature can replace currently used anticorrosive toxic pigments in coating systems, graphene can be an important component as a next-generation additive for many industrial applications (1). Graphene, a sheet of carbon atoms bound together in a honeycomb lattice pattern, is hugely recognized as a “wonder material” due to the myriad of astonishing attributes it holds. It is a potent conductor of electrical and thermal energy, extremely lightweight chemically inert, and flexible with a large surface area. It is also considered eco-friendly and sustainable, with unlimited possibilities for numerous applications.
The current bottlenecks in using graphene & graphene oxide are the availability of cost-effective, high-quality materials from graphite and their effective incorporation into the product matrices.

On overcoming these factors, graphene may attract significant demands in terms of volume consumption. Graphene can be produced on industrial scales and cost-effective top-down routes such as chemical, electrochemical, and/or high-pressure mechanical exfoliation. Graphene depending on end applications can be chemically tuned and modified via functionalisation so that easy incorporation into product matrices is possible. This talks able to discuss and Graphene advanced production methods and their impact on the quality of graphene produced in terms of energy input and quality. Graphene with an average thickness below five layers were produced by few methods with varied defects. Graphene additive role in Graphene Inks and Li-ion batteries, Anti corrosion coating for automotive, PEM Fuel cells as well discussed and commercial development electric floor heating of construction applications.

Keywords: Graphene, Few Layer Graphene, Graphene industrial scale up production, Inks and coatings, Graphite, PEM Fuel cells, Li-Ion Battery additives.

References

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