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Perspective

Reuse of Industrial Waste- Preparation of Electrochemical Sensors and Sound Absorbing Material Development

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DESCRIPTION

Industrial waste, is any substance that is made unusable during a manufacturing process, such as that of factories, mills, and mining activities. Industrial waste is the waste created by industrial activity. To achieve sustainable operations, innovation and technology applied to industrial waste management have been significant allies. Worldwide, every nation has its own set of rules. In Brazil, a solid waste management program from 2010 set aims to lessen the negative effects of trash by boosting recovery, reuse, and recycling. The pursuit of sustainability draws attention to the potential of polymeric, metal, and organic (biomass) leftovers as resources for the production of new goods. In line with green chemistry, rules, and circular economy concepts, strategies to turn these residues into new processes can enable new production chains that can lessen their negative effects on the environment. Carbon is a versatile element that may be found in many well-known allotropes, including graphite, diamond, carbon fibers, and fullerenes. It can be found in a wide range of materials with various electrical and chemical properties, which are present in many electrochemical applications and performances. In particular, graphene has become known as a real 2-dimensional material with exceptional mechanical, thermal, electrical, and chemical properties, including a huge surface area, high electrical conductivity, and quick heterogeneous electron transport. As a result, this material has recently been used in numerous technological fields, including electrochemical (bio)sensors, energy storage and conversion, biotechnologies, sports materials, electronics, and electronics. Since the first reported graphene sheets were made using highly oriented pyrolytic graphite and mechanical exfoliation (scotch-tape method), a number of different ways to make graphene have been described in the literature.

A unique production method utilizing cutting-edge technology and adaptable materials has recently been made possible by the invention of electrochemical sensors. Electrochemical sensors that are additively built (3D printed), as well as recycled materials used in design and electrode surface modification, have successfully shown the huge potential to create sensitive, portable devices for a variety of applications. As a result, industrial and post-consumer residues have been used to modify electrode surfaces, such as Polyethylene Terephthalate (PET) residues from drinking bottles used as a substrate for electrochemical sensors, polyurethane foams used as an agent to modify electrode surfaces, nanoparticles made from copper residues, and activated carbon and carbon nanotubes from lignocellulosic biomass.

Particularly in places with higher traffic volumes, traffic noise can have a significant negative impact on the surroundings. Urbanization and industrialization increase the number of vehicles on the road, which increases noise pollution. Road vehicles and other industrial machines produce low-frequency noises that could make it harder to understand speech and increase discomfort. Traffic noise has been recorded between 250 Hz and 4000 Hz. As a result, some important mitigation techniques are needed to reduce an elevated level of traffic noise. One of the best methods for reducing traffic noise is the use of noise barriers. While several materials are used to create acoustic panels, absorbent and soft materials are the most effective in reducing noise levels. During the manufacturing process, some materials produce waste.

CONCLUSION

To create a sound-absorbing substance for noise barriers using industrial waste, such as fly ash and scrap tire rubber. In recent years, biosurfactants' sustainable development has received a lot of attention. The current experiment proved that industrial waste materials might be used to make biosurfactants. The presence of carbon, nitrogen, and protein sources in industrial waste induces the hydrophobic and hydrophilic moieties in surfactant molecules.

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