

Sustainable oleo polymers: A promising alternative resource for petro-energy

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Abstract

The growth and development of all countries, in terms of their economic infrastructure and the quality of their citizen's life, depend on energy. Particularly, in developing economies, the demand for energy is high in various sectors including residential, agricultural, industrial, medical and economy. The energy for these sectors comes from conventional (e.g. fossil fuels) and non-conventional (e.g. wind, solar, biomass, biofuels) sources. The production of petroleum-based products, i.e. the main conventional resource, was increased by 2.2 million b/d (barrels per day), while the natural gas consumption grew by 195 billion cubic meters. Thus, the annual growth in the consumption of conventional sources of energy favors their exhaustion in the near future. Besides, their extensive consumption causes severe environmental pollutions that risks the health of human as well as other beings. Therefore, we must switch from the consumption of polluting-conventional resources to green and renewable ones. In this regard, the production of biodiesel/biofuels, which are produced from the green and environmentally friendly resources, like vegetable and animal oils, have attracted the attention of various sectors. Among these, the utilization of vegetable oils as feedstock for the production of biodiesels is found to be more effective, owing to their availability, diversity, and their versatile properties. According to Statista, the annual production of various vegetable oils was ~ 204 million metric tons (mmt) in 2018-19, which was higher than 2017-18 by ~ 6.7 mmt. The extensive production of these vegetable oils (VOs) has also facilitated their application in the production of functional materials and compounds, which directly reduced the production cost and consumption of fossil-based products. During the past decades, our group has extensively utilized vegetable oils as active materials and synthetic medium for the synthesis and development of functional polymers, paints, nanomaterials, hydrogels, artificial tissues, etc. that confirms the diversity and applicability of VOs as promising alternates. This suggest "that everything made from fossil fuels (materials) today can be made from a tree (sustainable resource) tomorrow".

Biography

Sharif Ahmad is a superannuated Professor of Materials Chemistry (Jamia Millia Islamia University, New Delhi, India). He did his Master (1976) and Doctoral (1981) degrees in Chemistry from AMU, Aligarh, India. He was nominated as the member to prestigious ACS for three years (2015 - 2018) and also has a membership of RSC, UK. He has over 225 publications that have been cited over 6408 times, and his publication's H-index is 46 and i-10 index is 139. He has successfully completed six major projects and produced more than 32 Ph.Ds.' to his credit.



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