

Editorial corner – a personal view

Polymeric materials from natural resources – emerging as the times require

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Nowadays most of the synthetic polymers are derived from non-renewable fossil oil. Environmental pollution has to be inevitably generated during their production. Besides, discards of the end-products are hard to be degraded. For keeping in step with societal concerns on energy crisis and ecological problems, reduction in the usage of petrol-based materials becomes more and more important. As a result, natural polymers are receiving increasing attention.

Since the traditional natural polymers (e.g., silk, rubber, etc.) cannot meet the tremendous needs of application in terms of species or properties, great efforts have to be continuously made to develop new polymers from natural resources. Compared to the non-degradable polymers from renewable resources, the materials that emulate the performance of petrol-based polymers while keeping biodegradability seem to be more promising.

In fact, bio-based polymers have been under investigation for many years. Both chemical and microbial approaches proved to be feasible to convert natural substances. The successful examples in this aspect are cellulose plastics (from cotton, woods, etc.), polylactide (PLA, from corn, sugarcane, etc.), polyhydroxyalkanoate (PHA, from glucose), starch plastics and soybean plastics, etc.

As mentioned above, however, many biodegradable polymers are based on food and feed, which are not cost-effective enough at present. Their applications have to be confined to some specific areas with high added value. In this context, manu-

facturing affordable and fully biodegradable polymers from annually renewable resources except food and feed coupled with low-cost processing techniques are critical. Attempts in this direction have been started, like plasticized wood sawdust, plant fibers reinforced plasticized wood sawdust, plasticized plant fibers, etc.

Although achievements in the field of green polymers are far from satisfactory, the new opportunities that were found during research and development have demonstrated it is a challenging job to invent new species with balanced performance. Interdisciplinary studies based on tight collaboration among scientists and governmental supports are prerequisites for overcoming the difficulties. Moreover, enterprises should be actively involved because they will gain benefit from production and usage of these new materials in the long term.



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