

## Editorial corner – a personal view

### Plastics and composites based on renewable resources: end-of-life recycling and recovery issues

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Environmental concerns undoubtedly drive the ‘greening’ of the plastics and composites industry. Thermoplastics and thermosetting resins from renewable resources derived from plants or micro-organisms, eventually reinforced with natural fillers or fibres, are developing significantly and the demand is increasing steadily. The world-wide scientific and industrial community is struggling for many years to improve industrial processability and properties of polylactide (PLA), polyhydroxyalkanoate (PHA), thermoplastic starch, soybean oil based polymers, etc. Applications in the packaging or transportation industries are more and more numerous. Many factors have contributed to the market acceptance of such green plastics and composites: Reduced dependence on fossil-fuel, reduced environmental pollution during their production (i.e. less CO<sub>2</sub> and greenhouse gases in the atmosphere), fight against ‘visual’ pollution of landscape (as ‘by product’ of land-filling with post consumer goods and scraps) and oceans.

Many biobased materials are biodegradable or compostable and therefore theoretically offer an outlet for overflowing solid-waste streams. Land-filling would not necessarily be avoided, but the degradation time is expected to be highly reduced. Great!

One should however keep in mind that recovery and recycling of post-consumer and post-industrial plastic and composites goods, waste and scraps are now well structured in the packaging and automotive

industries. Bottles and containers are collected, cars are dismantled, plastics and composites sorted and reground to be further used as fillers or commingled with virgin materials to manufacture new goods. Similar efforts are currently made in other industrial sectors (aeronautics, yachting/marine ...). ‘Green’ labels are awarded to petroleum-based products which warrant recycling or recyclability.

Unfortunately the green plastics, resins and composites based on renewable resources cannot currently be treated by the existing recycling/recovery plants. Paradoxically, this might be a brake to the further industrial development of these materials.

The end-of-life treatment of plastics and composites based on renewable resources has to be considered urgently as biodegradability and renewability does not necessarily mean eco-friendliness. Otherwise the benefit gained from production and usage of these ‘new’ materials will be lost on the long term.



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