Biodegradable composite materials based on starch

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Starch is an important ingredient in food and non-food industries (such as paper, plastic, adhesive). Starch is composed of amylose and amylopectin. The widespread occurrence of starch with its biodegradable nature and low cost gave rise to exploitation of starch as a means of improving the biodegradability of inert polymers. Biodegradable composite materials have been produced by mixing polyolefins with biodegradable polymers, obtained from renewable resources by incorporating special additives to the mixture, which accelerate the degradation process.

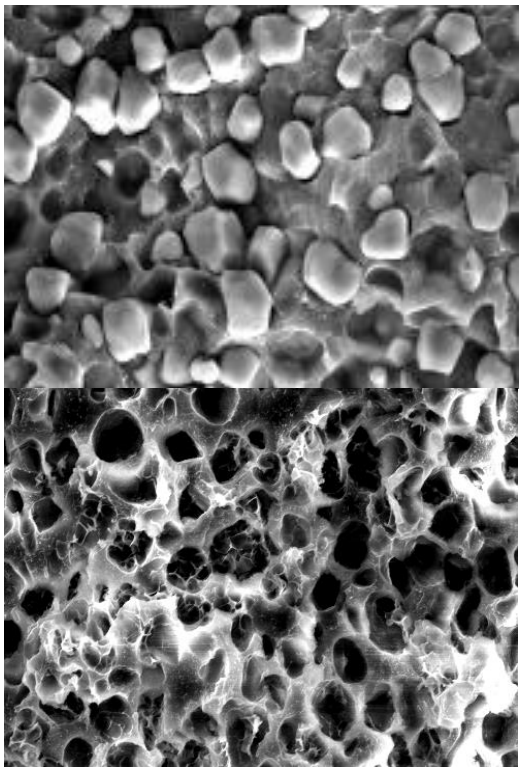

Fig. SEM image of the PP/starch samples before and after composting in natural weathering

In this study, an attempt is made to produce a biodegradable polymer from a polypropylene (PP) and corn starch at different filler content in order to investigate the effect on some properties. The biodegradable composites on base of starch and mixture of polyolefins – polypropylene, polyethylene and ethylene-vinyl acetate are prepared in the form of extrusion bands. It is established that the composite material in the system «starch – polyolefins» contains the particles of filler, disposed in polymer matrix randomly and contains the closed macropores as well. The products after use are exposed by biological decomposition in the conditions of composting in laboratory and nature conditions.