



R M S S Amararathne, Expert Opin Environ Biol 2019, Volume: 8

International Conference on

PLASTIC ENGINEERING & POLYMER SCIENCE

June 25-26, 2019 | Tokyo, Japan

Thermo-oxidative degradation of modified starch polymer composite ameliorated for industrial packaging applications – A study of analyzing the effect for degradation by assembling pro-oxidants and elastomers into esterified starch (with lauric acid)-plastic blend

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This research is striving to develop a thermo degradable starch plastic compound/ master batch for industrial packaging applications. A native corn starch modified with an esterification reaction of lauric acid is melt blent with an unsaturated elastomer (styrene-butadiene-rubber/styrene-butadienestyrene). A trace amount of a metal salt is added into the internal mixer to study the effect of pro-oxidants in a thermo oxidative environment. Then the granulated polymer composite which is consisted with 80-86% of polyolefin (LLDPE,LDPE,PP) as the pivotal agent; is extruded with processing aids, antioxidants and some other additives in a co-rotating twin-screw extruder. The pelletized composite is subjected to compression moulding/ injection moulding or blown film extrusion processes to acquire the samples/specimen for tests. The degradation process is explicated by analyzing the results of fourier transform infrared spectroscopy (FTIR) measurements, thermo oxidative aging studies (placing dumb-bell specimen in an air oven at 70°C for four weeks of exposure.) Governed by tensile and impact strength test reports . Furthermore the samples were elicited into manifold outdoors to inspect the degradation process.

Biography

Rathnayaka Mudiyanselage Sachini Swarnamala Amararathne is working as the Quality Assurance Manager and the head of the R & D department in Ceylon Polymer Pvt Ltd, Sri Lanka where she conducts her research trials. She is a 26 years old individual, has completed her B.Sc. Specialized in polymer science and technology in 2017 from University of Sri Jayewardenepura, Sri Lanka and was selected to follow M.Sc. in Polymer Science and engineering program in the same university and précised to complete the post graduation in 2019.

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