

## **CELL 48: Residues from agroindustry as reinforcement in foams based on PBAT/PLA blend**

**Abstract:** Nowadays, agroindustry residues have attracted great attention in both the academic and industrial worlds. In fact, biodegradable polymers reinforced with residues derived from renewable sources, as avian eggshell waste and ashes from the burning of sugarcane bagasse are economically and ecologically attractive materials to produce a new class of bio-products with eco attributes, which make them environmentally friendly, completely degradable and sustainable. In Brazil, the food industry generates every year huge amounts of avian eggshell waste, an industrial byproduct containing 95 % of calcium carbonate, and its disposal constitutes a serious environmental hazard. Tons of ashes are produced from the burning process of sugarcane bagasse to produce energy in Brazilian sugar and bioethanol industries. These ashes, which are not rich in nutrients for the crop, are usually mixed with organic fertilizers or disposed of in nature without efficient management. However, these ashes containing about 94 % of silica. This study aims to the development of bio-foams from PBAT/PLA blend reinforced with bio-calcium carbonate nanoparticles from eggshells and green-silica nanoparticles. Composites were obtained by melting extrusion process, blending PBAT/PLA with 3 % of bio-calcium carbonate nanoparticles and 3 % of green-silica nanoparticles. The composites were then extruded in a Rheomex 332p single special screw for foaming. Samples were submitted to tensile and compression tests, MFI, DSC, XRD and SEM-FEG analyses.

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