

## Valorization of plastic wastes for value-added applications

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### Abstract

The marine pollution of plastic wastes is one of the severe impacts of the human activities on the planet. Main treatments of plastic wastes include landfilling and incineration with or without energy recovery. A sustainable management is transforming such wastes into value-added products. This study aims to reinforce recycled plastics with unusable agricultural wastes so to meet requirements of added value use of recycled plastics. In this study, recycled polystyrene (R-PS) is reinforced with cottonseed hulls (CS-H). Beyond 30 %wt content, the non-adhesion of fillers to the plastic acts likely as a high porosity and decreases the tensile resistance of R-PS. Regardless of the content of CS-H fillers, the addition of these increases the Young modulus of R-PS (from 1600 MPa up to 3600 MPa at 20% wt of CS-H content) and decreases its impact resistance by -20% (the peak impact force decreases from 1 KN to 0,8 KN and the absorbed energy from 2,72 J to 2,25 J).



### Biography:

PADAYODI Essolé is Associate Professor at University of Technology of Belfort-Montbéliard (UTBM, France) and has his expertise in biosourced materials and passion in sustainable design. He is a header of the “Eco-materials” platform in the pole ERCOS of ELLIADD (EA. 4661, France) laboratory where he led technology research projects for developing sustainable and lightweighting materials for automotive companies.

### Speaker Publications:

1. “Physical modeling of heat and moisture transfer in wet bio-sourced insulating materials”; Review of Scientific Instruments/ Vol 89, 2018, 104902.
2. “Depiction of interfacial characteristic changes during impact welding using computational methods: Comparison between Arbitrary Lagrangian - Eulerian and Eulerian simulations”; Materials & design / Vol 101 2016.
3. “Interfacial kinematics and governing mechanisms under the influence of high strain rate impact conditions: Numerical computations of experimental observations”; Journal of the Mechanics and Physics of Solids/ Vol 96, 2016.
4. “Finite Deformation and Viscoelasticity Modeling and Test”; Journal of Scientific Research/ Vol 03, 2012.
5. “Thermo-mechanical behaviour of the structures of tropical clays from Togo (West Africa) fired at 500°C, 850°C and 1060 °C”; Construction and Building Materials/ Vol 27, 2012, 141-148

[6<sup>th</sup> Edition of International Conference on Polymer Science and Technology](#); Webinar– April 01-02, 2020.

### Abstract Citation:

Essolé Padayodi, Valorization of plastic wastes for value-added applications, Euro Polymer Science 2020, 6th Edition of International Conference on Polymer Science and Technology; Webinar – April 01-02, 2020. (<https://polymerscience.annualcongress.com/abstract/2020/valorization-of-plastic-wastes-for-value-added-applications>)