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Value-added Industrials Products from the Co-products of Biofuel Industries: Challenges and Opportunities

The biofuels like bioethanol, biobutanol and biodiesel derived from plant and forest resources are getting accelerated momentum and a great deal of attention across the world. The downstream products of these emerging alternative fuel industries are now under criticism in disturbing the main focus of environmental sustainability. Currently a major concern that has been realized is to find value-added industrial products from the downstream co-products in order to provide a sustainable development for the biofuel industries. Biorefinery concept is vital in moving towards a sustainable bioeconomy. In ligno-cellulosic biomass conversion into ethanol the substantial quantity of low/negative value leftovers such as lignin, carbon dioxide and residues are finding great attention in their value-added uses. In ligno-cellulosic ethanol industries; ethanol and lignin are produced at ~1:1 on a quantum basis in general. Similarly in corn ethanol dry-milling process, one bushel of corn produces 1/3rd as ethanol, 1/3rd as carbon dioxide and rest 1/3rd as Distillers' Dried Grains as Solubles (DDGS). Both soy meal (SM), canola meal (CM) and glycerol are byproducts of the emerging biodiesel industry. This presentation will highlight the research results, current status, opportunities, and challenges on engineering uses of the downstream products as plastic resins, biodegradable plastics, bioadhesives, biorubber and biocomposites.

Short CV: Amar Mohanty, Professor and Ontario Premier's Research Chair in Biomaterials and Transportation at the University of Guelph, a former Michigan State University professor is an international leader in the field of biomaterials and biorefinery. His research interest comprises bioeconomy related to biobased materials, biofuels and biorefinery. Main focus of his research on biofuel area targets to find value-added engineering uses of the downstream co-products of biofuel industries. He has more than 250 publications to his credit, including 137 peer-reviewed journal papers, 4 book chapters, 3 text books, 1 edited book, 2 magazine articles, 7 US Patents awarded and 18 patents pending. He is an accomplished researcher and was the holder of the prestigious Alexander von Humboldt Fellowship in Technical University of Berlin, Germany and received the Andrew Chase Forest Products Division Award for 2006 from the Forest Products Division of the American Institute of Chemical Engineers. He was the lead editor of a book "Natural Fibers, Biopolymers and Biocomposites" published by Taylor & Francis CRC Press in 2005. Dr. Mohanty serves as Editorial Board Member in the Journal of Polymers and Environment, Recent Patents on Material Science and Journal of Nanoscience and Nanotechnology. He is the "Editor-in-Chief" of the Journal of Biobased Materials and Bioenergy.