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## An environmentally friendly method for industrial waste recycling

Mohamed Sulyman, Maciej Sienkiewicz and Jozef Haponiuk  
Gdansk University of Technology, Poland

Wastes management is one of the major topics today for scientists, researchers, and technologists. However, in the last few years industrial waste recycling has more attention all over the world. In this study, three industrial waste materials namely; crumb rubber (CR), textile fiber (TF) and polyurethane foam (PUF) has been combined to develop a new composite material for different application. Binary and ternary composites were obtained during the extrusion process using GMF 106/2 Brabender single continuous mixer. Temperature of mixing chamber and the speed of mechanical shear were 180°C and 100 rpm respectively. These composites have been used in two approaches: first, is applied for modification of asphalt to improve its engineering properties such as softening point, penetration, rutting resistance, and the rheology. Second approach is that using these composites after molded by compression molding as also a new product. The results of first approach showed that, physical properties of modified asphalt have been greatly improved in comparison to the unmodified asphalt. Storage stability of modified asphalt by both composites was also improved compared to the asphalt modified with a single modifier. The finished products obtained during the first approach can advantageously be used for road and pavement construction, waterproof materials, and others. The finished products by second approach can be utilized at industrial application, as well as scientific experimentation as shown in figure 1.

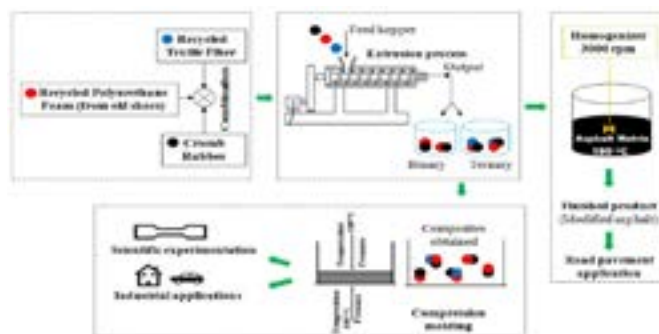


Figure 1: Processing of polymer waste composites and their applications

## Biography

Mohamed Sulyman obtained PhD degree in 2017 in the field of Chemical Technology at Faculty of Chemistry of the Gdansk University of Technology in Poland. Currently, he is doing Postdoctoral studies at Gdansk University of Technology. He has several publications and conference participations related to the main scope of his research work. His scientific interests are recycling of natural and syntactic solid wastes, modification of asphalt, and polymer processing.

mohsulym76@yahoo.com