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Processing of waste PET-G foil using extrusion method

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From the environmental point of view there is a great interest in a recycling of packaging foils. Most of them are based on glycol modified poly (terephthalate ethylene)-PETG- printed with colorful inks. Therefore, there is necessary to rinse out inks from the foils first to make them processable. In the first step, the waste foils coming from different producers were characterized in terms of their structure and composition. It was found that they are similar to each other and that is possible to wash away all of the colorful inks in one shot with the appropriately selected medium. The comparison of properties of the foils before and after washing showed that there is no effect of the solvent used. In the next step the transparent foils after washing were dried and processed directly by the twin screw extruder machine in laboratory scale. Based on the results from thermal analysis (TGA, DSC) and rheological behavior (MFI index, shear modulus, complex viscosity) the processing conditions have been optimized. Finally, the effect of different processing temperature and number of cycles on properties of regrind material was investigated. The aim of the study was to analyze the possibility to use regrind PETG foil as a raw material. It would be add to pure PETG to decrease the costs of production or to mix with e.g., nanoparticles to provide new properties.

Biography

Kamil Dydek received graduation from FPAE WUT in 2015 and has started his PhD at Warsaw University of Technology in the Department of Materials Science and Engineering, Poland.

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