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Development and thermal characterization of Ag nanofiller from polymer wastes**Olusola Olaitan Ayeleru¹, Freeman Ntuli¹, Peter Apata Olubambi¹ and Williams Kehinde Kupolati²**¹University of Johannesburg, South Africa²Tshwane University of Technology, South Africa

The upsurge in the number of plastic materials consumed yearly has contributed greatly to the growth of Municipal Solid Waste (MSW) and ultimately the amount of plastic wastes generated. The rate of plastic wastes generation in South Africa is growing at geometric rate due to population explosion. Apart from its daily increment, plastic waste is a menace, burden on the environment and there is need to dispose it in an environmental friendly way, but the current method of disposal is unsustainable. Hence, the development of nanofillers from plastic wastes can be a sustainable alternative since landfilling and incineration pose serious threat to the environment. In this study, Ag nanofiller was developed from Polystyrene Waste (PW). The PW was obtained from Household Wastes (HWs); it was cleaned, dried and crushed. It was then dispersed into solvent and sonicated for 20 minutes. Thereafter, AgNO₃ was added to the mixture and was sonicated for another 20 minutes and was transferred into a hydrothermal autoclave reactor. It was placed in an oven for a period of 3 hours at the temperature of 250 °C. The resulting product obtained was a dark black substance and was characterized using SEM, EDS, FTIR, TEM, XRD and TGA and DSC. The results obtained showed that the effective means of recycling waste plastics is through the development of nanofillers.

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