



Synthesis, Characterization, Thermal Analysis and Antimicrobial Evaluation of Bis(2-arylamino-2-oxoethyl)terephthalates from the Depolymerization of Post-Consumer PET Bottles

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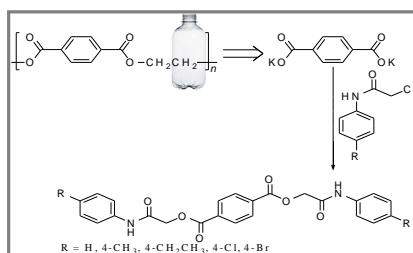
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ABSTRACT

This paper describes the synthesis and characterization of five bis(2-arylamino-2-oxoethyl) terephthalates (**5a-e**), which were obtained in three steps: (i) preparation of potassium terephthalate (**2**) from the depolymerization reaction of post-consumer polyethylene terephthalate (PET) bottles (**1**) at 90% yield; (ii) acetylation reaction of aromatic amines (**3a-e**) with chloroacetyl chloride at 76-95% yield; and (iii) alkylation reaction of recycled potassium terephthalate (**2**) with 2-chloro-N-arylacetamides (**4a-e**) at 30-90% yield. The final compounds (**5a-e**) were characterized by spectroscopic techniques of IR and one- and two-dimensional (for **5a**) NMR, and by mass spectrometry. This work still presents the TGA and DSC curves and the antimicrobial evaluation of the bis(2-arylamino-2-oxoethyl) terephthalates (**5a-e**).

Graphical Abstract



Highlights

- Five bis(2-arylamino-2-oxoethyl) terephthalates were synthesized through reaction of recycled potassium terephthalate with five 2-chloro-N-arylacetamides.
- TGA and DSC curves of terephthalate derivatives were studied.
- Antifungal and antibacterial activity of terephthalate derivatives was evaluated.

Keywords: Recycling, Depolymerization, Terephthalates, Acetamides, Antimicrobial evaluation, Thermal analysis.