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**PREPARATION OF NEW NANOCOMPOSITES OF
POLYETHYLENE/POLYANILINE/GRAPHITE WITH SPECIAL
MORPHOLOGY**

Ariane M. Lentz^{1*}, Grasiela Gheno¹, Thuany Maraschin², Nara R.S. Basso², Naira M. Balzaretto³, Marcéo A. Milani¹, Griselda B. Galland¹

¹Instituto de Química, Universidade Federal do Rio Grande do Sul, Porto Alegre, RS, Brazil

²Faculdade de Química, Pontifícia Universidade Católica do Rio grande do Sul, Porto Alegre, RS, Brazil

³Instituto de Física, Universidade Federal do Rio Grande do Sul, Porto Alegre, RS, Brazil

*Corresponding author: arianemlantz@hotmail.com

Abstract: Polyaniline (PANI) is an intrinsically conductive polymer that has attracted high attention due to its easy high yield synthesis, low cost monomer, tunable properties, and high environmental stability. The conductivity can be also enhanced using a high conductive filler as graphite. Nanocomposites of polyaniline nanofibers (PANI) with graphite oxide (GO) or reduced graphite oxide (rGO) were synthesized and characterized. There were obtained four samples of PANI/graphite with 10% and 30% of GO or rGO. The addition of GO or rGO in PANI nanofibers increased the conductivity of the nanofillers and improved the thermal stability. These nanofillers were used in the *in situ* ethylene polymerization to obtain PE/PANI/graphite nanocomposites with different percentages of PANI/graphite nanoparticles. The olefinic nanocomposites were characterized by SEM and TEM that showed very special morphologies. PANI/GO or PANI/rGO nanoparticles showed a good dispersion in polyethylene and an increase of thermal stability of the final material was observed. Melting and crystallization temperatures also increase in the polyethylene nanocomposites compared with neat polymer.

Keywords: Nanocomposites, polyethylene, polyaniline, graphite.