

## Thermal and Morphological Properties of SBS Nanocomposites

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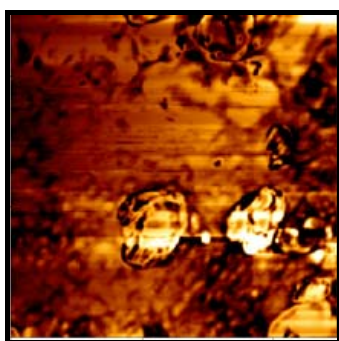
**Abstract** – The aim of this work was to study the thermal and morphological properties of nanocomposites based on SBS and an organically modified montmorillonite in different concentrations processed in a melting state. The samples were characterized by thermogravimetry, scanning electron microscopy and atomic force microscopy. The results showed that the addition of nanoclay slightly changed the thermal stability of SBS, and by the analysis of SEM and AFM it was observed that there was not a complete nanoclay delamination in the copolymer matrix.

Polymeric nanocomposites are a new class of composites that contain small quantities of nanoparticles with one of its dimensions in the nano-scale. The development and study of nanocomposites have attracted great scientific and technological interests due to its properties, such as mechanical, thermal, gas and solvents permeation, flame retardant and dimensional stability. The objective of this work was to study the properties of nanocomposites based on SBS and an organically modified montmorillonite (Nanomer I.34TCN from Nanacor) in different concentrations. Nanocomposites were prepared by melt mixing in a Haake mixer at 180°C, 70 rpm for 7 min. Based on the analysis of SEM and AFM (Fig 1) it was observed some aggregates which showed that there was not a full delamination of the nanoclay in the copolymer matrix (Fig 2). The incorporation of nanoclay slightly changed the thermal stability of the material (Table 1).

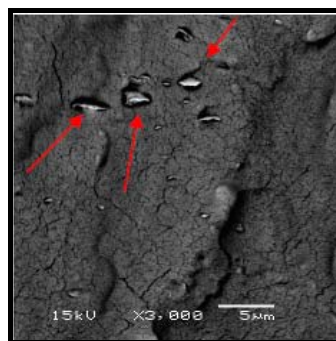
**Table 1:** Thermogravimetric Analysis of the Nanocomposites.

Material	On set (°C) - T <sub>i</sub>	T <sub>i</sub> (°C)	T <sub>DTG</sub> (°C)
SBS	438	498	469
SBS+1%	439	498	465
SBS+3,5	442	498	469
SBS +6%	441	498	465

\* Temperature in the maximum peak of the derivative



**Figure 1:** AFM of SBS+6% Nanocomposite



**Figure 2:** SEM of SBS+6% Nanocomposite

### References

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