# Oxygen Plasma Treatment of Carbon Blacks on Surface and Thermal Properties of Carbon Black/NBR Composites

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Carbon black is widely used as filler in elastomers and paints to modify the mechanical and optical properties of materials in which they are dispersed and consequently determine their applications. In this work, the influence of oxygen plasma treatment of carbon blacks on the surface properties and thermal stabilities of the carbon black/acrylonitrile butadiene rubber (NBR) composites was investigated. The surface properties of the carbon blacks were studied by surface free energies, pH, and acid-base value measurements. And the mechanical interfacial properties and thermal properties of the composites were evaluated by the tearing energy and decomposition activation energy. As an experimental result, the surface free energies and acid values of the carbon blacks were increased by increasing the plasma treatment time. The pH and base values were decreased as the plasma treatment time increased. Also, the thermal stabilities of the composites were increased with increasing the treatment time up to 20 min.