

Polymer Nanocomposites for Gas Barriers and Membranes

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Intensive research has focused on the development of a variety of new polymer materials for gas barriers and membrane-based applications. Studies on structure and gas transport properties relationship for polymer materials have demonstrated that modification of intrasegmental mobility, intersegmental packing and incorporation of additives are powerful techniques to achieve a desirable combination of higher permeability and selectivity or high barrier properties. Based on these basic principles of modification of the polymer structure several materials were develop and studied including polymer nanocomposites with the addition of organoclay and zeolite. The results show that the incorporation of inorganic filler of nanoscale dimension can lead to significant improvement of the transport properties of the polymer matrix.

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