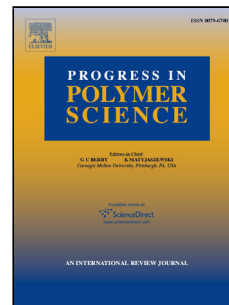


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Intercalation strategies in clay/polymer hybrids

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ABSTRACT

Layered silicate clays are natural crystallites and are well recognized for their structures and industrial applications, but there are very few reports on their structural confinement properties and on the mechanisms that underlie their polymer interactions. In this review, we summarize the recent progress on clay modification via conventional ion exchange reactions, sol-gel linking, atom transfer radical polymerization, and polymer intercalation. The organic interaction of ionic clays involves different noncovalent bonding forces, such as amido acid five-membered ring chelation, carboxylic acid chelation, intermolecular hydrogen bonding, and double-layer hydrophobic alignment in a layered clay confinement. Controlling the organic species, their amounts and their self-assembled conformation in a clay confinement could lead to the tailoring of the silicate platelet interlayer distance and of their organophilic properties.

Furthermore, the layered structure could be totally exfoliated and structurally randomized into individual silicate platelets using different mechanisms, such as the phase inversion of amphiphilic

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