

作用,形成较强的氢键作用力,使康戊胶与蒙脱土具有较好的相容性。

(2)当蒙脱土用量为 5 份时,蒙脱土/康戊胶纳米复合材料为剥离型;当蒙脱土用量大于 10 份时,复合材料为隔离型,材料中既含有剥离型的单片层也含有部分插层型片层结构。

(3)随着蒙脱土用量的增大,蒙脱土/康戊胶胶料的硫化时间延长,复合材料的定伸应力和拉伸强度增大,拉断伸长率先增大后减小,气密性能先显著提高后趋于平稳。

参考文献:

- [1] 王益庆,张惠峰,尹丽君,等. 累托石/SBR 纳米复合材料的结构与性能[J]. 橡胶工业,2003,50(8):457-461.
- [2] 王益庆,张惠峰,吴友平,等. 累托石/NR 纳米复合材料的结

- 构与性能研究[J]. 橡胶工业,2006,53(3):133-138.
- [3] 赵永生,王克俭,朱复华,等. 有机改性蒙脱土/木粉/PVC 复合材料的阻燃性研究[J]. 塑料工业,2007,35(6):161-164.
- [4] 王小英,刘博,汤玉峰,等. 累托石/聚合物纳米复合材料的新进展[J]. 无机材料学报,2012,27(2):113-121.
- [5] 祁向升,敖宁建,陈美,等. 胶乳法制备天然橡胶/蒙脱土纳米复合材料研究[J]. 电子显微学报,2003,22(6):535-534.
- [6] 欧阳星,罗远芳,贾德民. 混炼插层法制备天然橡胶/蒙脱土纳米复合材料[J]. 华南理工大学学报,2006,34(9):80-85.
- [7] Wang R, Ma J, Zhou X, et al. Design and Preparation of a Novel Cross-linkable, High Molecular Weight, and Bio-based Elastomer by Emulsion Polymerization[J]. Macromolecules, 2012,45(17):6830-6839.
- [8] 杨科,王锦成,郑晓昱. 蒙脱土的结构、性能及其改性研究现状[J]. 上海工程科技大学学报,2011,25(1):65-70.

收稿日期:2014-05-21

Investigation on Structure and Property of Montmorillonite/ Poly(Diisoamyl Itaconate-co-Isoprene) Nanocomposite

YAO Hui, WANG Run-guo, XING Qing-yu, GAO Ning, CHU Jun-feng, ZHANG Li-qun
(Beijing University of Chemical Technology, Beijing 100029, China)

Abstract: The sodium based montmorillonite/bio-based synthetic rubber poly(diisoamyl itaconate-co-isoprene) nanocomposites were prepared by latex co-coagulation method, and the chemical structure, microstructure, curing behavior, physical properties and air tightness of the nanocomposites were investigated. The results showed that the compatibility between poly(diisoamyl itaconate-co-isoprene) having polar ester groups and montmorillonite was good. When the addition level of montmorillonite was 5 phr, most of the montmorillonite in the nanocomposite was exfoliated. When the addition level of montmorillonite was over 10 phr, the nanocomposite had phase separated structure. As the addition level of montmorillonite increased, the modulus and tensile strength of the nanocomposites increased, and the air tightness was improved sharply at first and then became stable.

Key words: sodium based montmorillonite; bio-based synthetic rubber; poly(diisoamyl itaconate-co-isoprene); nanocomposite; physical property; air tightness

一种高导电橡胶复合材料及其制备方法

中图分类号: TQ330.38⁺3 文献标志码: D

由北京化工大学申请的专利(公开号 CN 103289138A, 公开日期 2013-09-11)“一种高导电橡胶复合材料及其制备方法”, 涉及的高导电橡胶复合材料制备方法为: 首先通过在氧化石墨烯表面镀银制得高导电填料, 然后将其与橡胶水乳

液共混使镀银氧化石墨烯以单片层或极少量纳米片层分散在橡胶基体中, 再采用原位热压还原方法将氧化石墨烯还原为石墨烯, 形成石墨烯片层包裹胶乳粒子的网络结构。这种高导电橡胶复合材料在较低的填充量下即具有很高的电导率, 导电逾渗值低。

(本刊编辑部 赵 敏)