

- [6] Vanhoorne P, Jerome R, Teyssie P, et al. Filler and Percolation Behavior of Ionic Aggregates in Styrene-Sodium Methacrylate Ionomers[J]. *Macromolecules*, 1994, 27(10): 2789-2803.
- [7] Kraus G, Gruver J T. Thermal Expansion, Free Volume, and Molecular Mobility in a Carbon Black-filled Elastomer[J]. *J. Polym. Sci. Polym. Phys. Ed.*, 1970, 8(4): 571-581.
- [8] Brown A, Marcadon V, Mele P, et al. Effect of Filler Particle Size on the Properties of Model Nanocomposites[J]. *Macromolecules*, 2008, 41(4): 1499-1511.
- [9] Leu G, Liu Y, Werstler D D, et al. NMR Characterization of

- Elastomer-Carbon Black Interactions[J]. *Macromolecules*, 2004, 37(18): 6883-6891.
- [10] Cotten G R. The Effect of Carbon Black Surface Properties and Structure on Rheometer Cure Behavior[J]. *Rubber Chem. and Technol.*, 1972, 45(1): 129-144.
- [11] Payne A R. Strainwork Dependence of Filler-loaded Vulcanizates[J]. *J. Appl. Polymer Sci.*, 1964, 8(6): 2661-2686.
- [12] Kraus G. Mechanical Losses in Carbon Black-filled Rubbers[J]. *J. Appl. Polym. Sci. Appl. Polym. Symp.*, 1984, 39(3): 51-53.

收稿日期: 2015-04-10

Effect of Vulcanization on Multiple Interactions of Carbon Black Filled SBR

SUN Chong, ZHAO Shu-gao

(Qingdao University of Science and Technology, Qingdao 266042, China)

Abstract: The effect of vulcanization on multiple interactions in carbon black (CB) filled SBR was investigated by means of MDR, RPA and DMA. The results showed that the CB aggregates agglomerated at the initial stage of vulcanization. It was found that when the addition level of CB reached a certain value, the reinforcement effect of CB on the compounds was better than the vulcanizates, and the reinforcement effect was significantly affected by strain sweep. Payne effect was related to the CB volume concentration. The increase of glass transition temperature (T_g) of the compounds with increase of CB volume concentration was larger than that of the vulcanizates. The difference of T_g of unfilled system before and after vulcanization was larger than that of filled system. The T_g and bound rubber content increased linearly with the increase of CB content.

Key words: SBR; carbon black; vulcanization; filling; multiple interactions; agglomerate

朗盛新加坡钕系顺丁橡胶工厂正式投产

中图分类号: F276.7; TQ333.2 文献标志码: D

2015年9月7日,朗盛位于新加坡的钕系顺丁橡胶(NdBR)生产厂正式投产。这座世界级生产基地坐落于裕廊岛上,毗邻朗盛的顺丁橡胶(IIR)工厂,总投资额达2亿欧元,年产能力达14万t,新增了约100个高技术工作岗位。新工厂将逐步释放产能,主要供应不断增长的亚洲NdBR市场,并服务于全球市场。

“新加坡是我们面向亚洲市场的合成橡胶生产中心,这座新落成的顺丁橡胶(BR)工厂与毗邻的IIR工厂巩固了新加坡基地的这一战略地位。”朗盛集团管理董事会主席常牧天(Matthias Zacherl)表示。

新加坡的新工厂是朗盛在亚洲的首个NdBR生产基地。朗盛轮胎与特种橡胶业务部(TSR)在美洲与欧洲另外还设有9座生产厂。除了NdBR,该业务部还生产其他品种的BR、溶聚丁苯橡

胶和IIR等。“这座新工厂汇聚了我们其他生产厂的最佳技术与实践经验。现在,我们已经完善了全球生产网络,可以很好地为全球的轮胎行业以及其他行业客户提供服务。”轮胎与特种橡胶业务部全球负责人Jorge Nogueira表示。

NdBR是最为先进的BR,是轮胎胎侧与胎面的关键材料,可提升燃油效率,使绿色轮胎成为可能。这种材料还能降低轮胎磨损,从而提高汽车的安全性与经济性。NdBR可用于制造滚动阻力低、耐用性与安全性俱佳的轮胎。

朗盛与一家全球化工物流服务供应商合作进行的公路测试已经证明,绿色轮胎可将载重汽车的燃油消耗降低8.5%。与德国能源供应商RheinEnergie联合进行的测试表明,绿色轮胎最多可将乘用车在城市交通中的燃油消耗降低7%。

NdBR除了用于制造高性能轮胎之外,还可用于改善高尔夫球、跑鞋与输送带的性能。

(本刊编辑部 黄丽萍)