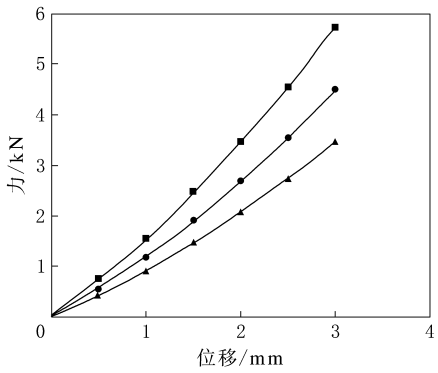

注同图 9。

图 10 胶料硬度对橡胶主簧径向力学特性的影响

计算结果与试验结果相近,误差在工程设计允许范围内,证明有限元模型与计算方法正确。

(2)随着胶料硬度的增大,橡胶主簧轴向和径向静态刚度均增大,其中径向静刚度对胶料硬度变化尤为敏感。

(3)有限元仿真计算可极大地减少液压悬置产品开发过程中样件试制与试验次数,降低开发成本并缩短研发周期。

参考文献:

[1] 鲍宁. 动力总成液压悬置的参数化设计[D]. 长春:吉林大学,2007.

[2] 王芳. 橡胶主簧的数值建模分析与试验验证[J]. 机械设计,2007,24(4):35-37.

[3] 龙岩. 橡胶主簧的有限元分析及对液阻悬置性能的影响[J]. 机电工程,2008,25(4):48-51.

[4] 梁天也,史文库. 汽车动力总成液压悬置橡胶主簧静特性有限元分析[J]. 振动与冲击,2007,26(9):155-158.

[5] 饶寿期. 有限元法和边界元法基础[M]. 北京:北京航空航天大学出版社,1990.

收稿日期:2013-12-26

Calculation and Experimental Study on Static Mechanical Properties of Main Rubber Spring for Hydraulic Engine Mount

HAO Wei, *XU Yan-min*

(Guangdong Jidian Polytechnic College, Guangzhou 510515, China)

Abstract: Based on the finite element method and Abaqus software, a finite element discrete model of the main rubber spring for a minibus hydraulic engine mount was established. The static mechanical properties simulation method of the main rubber spring was discussed focusing on axial and radial directions. The model was then verified by experimental results, which were in good accordance with the simulated results. The influence of rubber hardness on the static characteristics of main rubber spring was calculated and analyzed, and the results showed that the rubber hardness had great influence on the static characteristics of main rubber spring especially in radial direction.

Key words: main rubber spring; static mechanical property; finite element method; experiment

一种高模量、低生热的碳纳米管/橡胶复合材料制备方法

中图分类号:TQ332.5;TQ334.9 **文献标志码**:D

由北京化工大学申请的专利(公开号 CN 102924763A,公开日期 2013-02-13)“一种高模量、低生热的碳纳米管/橡胶复合材料制备方法”,提供了一种高模量、低生热的碳纳米管/橡胶复合材料制备方法,即利用等离子体改性方法在碳纳米管表面沉积一层 1~2 nm 的聚丙烯酸无定形层,将这种改性后的碳纳米管与硅烷偶联剂通过机械共混的方法加入到橡胶中,并采用高温状态下热辊处理的技术进一步增强其界面结合作用,提高分散效果;最后在高温高压状态下硫化制得产品。涉及的橡胶为天然橡胶、异戊橡胶、丁苯橡胶或顺丁橡胶,碳纳米管为普通碳纳米管或具有一维取向排列结构的碳纳米管束。该复合材料的拉伸强度和模量明显提高,压缩生热大幅降低。

(本刊编辑部 赵 敏)