

聚醚砜/含萘聚芳醚酮共混体系的初步研究

陈兴波, 江东, 牛亚明, 张云鹤, 姜振华*

(吉林大学化学学院 长春 130023)

聚芳醚砜作为一类工程塑料具有一系列优异的性能,例如:高的玻璃化转变温度,良好的抗水解以及耐工业溶剂性,优异的热氧化稳定性等诸多优点^[1]。关于这类无定形聚合物的合成、性能及应用已有诸多报道^[2,3]。然而,聚芳醚砜也存在着一些不足之处:作为热塑性塑料,它确有较高的熔融粘度和较低的断裂伸长率。含萘聚芳醚酮拥有优异的延展性,较高的拉伸强度和良好的热稳定性,其拥有较高的 T_g 和较好的溶解性^[4]。

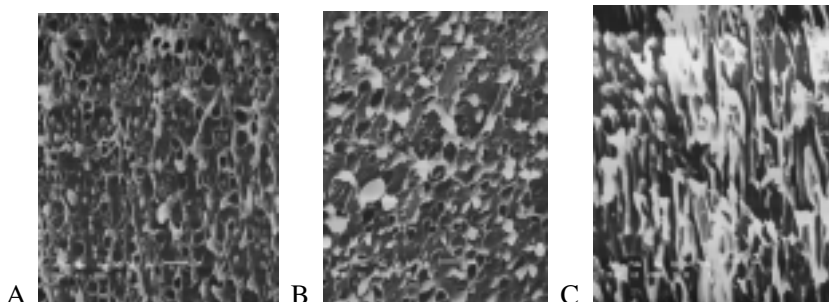
本工作的目的是改进 PES 的韧性,研究 PES/NA-PAEK 共混物的相容性及动态力学性质。通过 SEM 观察共混物的相容性,通过 DSC、DMA 测共混物的热学行为,万能拉力机测试共混物的机械性能。

结果表明 PES/NA-PAEK 共混物是一个部分相容体系,其拉伸强度、拉伸模量、断裂伸长率均比纯 PES 高。共混物的拉伸强度和模量随 NAPA EK 含量的增加而线性增长,断裂伸长率在 NAPA EK 含量为 40%时达到最大。

Table1 Comparison of DSC and DMA ($\tan\delta$) for blends

component	PES (DSC)	NA-PAEK	PES	NA-PAEK
PES/NAPEK (wt/wt)	T_g ()	(DSC) T_g ()	(DMA) T_g ()	(DMA) T_g ()
100/0	226.42		238.36	
80/20	225.38	196.70	238.03	205.36
70/30	224.64	195.97	237.59	205.55
60/40	224.46	195.85	237.77	207.25
50/50	224.16	195.30	238.41	210.27
40/60	223.89	195.35	238.19	210.02
0/100		192.46		207.59

Figure1 SEM photographs of the blends: (magnification $\times 10000$): PES/NA-PAEK A(80/20); B(70/30); C(60/40)



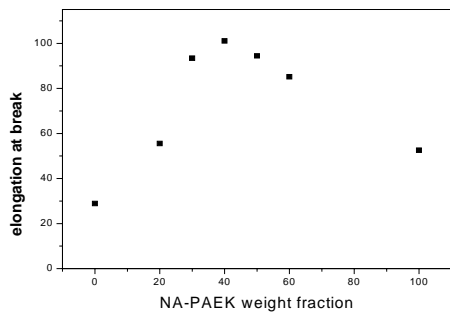


Figure 2 Effect of content of NA-PAEK on elongation of blend

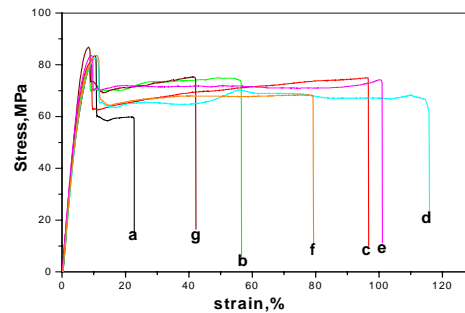


Figure 3 Stress-strain curves of PES/NA-PAEK: break on a) 100/0 (b) 80/20 (c) 70/30 (d) 60/40 (e) 50/50 (f) 40/60 (g) 0/100

关键词；聚醚砜 含萘聚芳醚酮 共混物

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Preliminary Investigation of Polyethersulfone/Poly (aryl ether ketone) Containing 1,4-Naphthalene Blends

Xingbo Chen, Dong Jiang, Yaming Niu, Yunhe Zhang, Zhenhua Jiang*

(Engineering Research Center of Jilin University for Super Engineering Plastics, Ministry of Education, College of Chemistry, Jilin University, ChangChun 130012)

Abstract: The blends of polyethersulfone (PES) and Poly (aryl ether ketone) containing 1,4-Naphthalene (NA-PAEK) were prepared by melting in a Brabender-like apparatus. The specimens for measurements were made by compression molding under pressure and then quenched in water at room temperature. The mechanical properties, thermal properties and morphology of blends were studied by universal tester, DSC and SEM respectively. The dependence of tensile strength, tensile modulus, elongation at break on blend systems was obtained. The effects of composition and miscibility on the mechanical properties were discussed.

Keywords: polyethersulfone ,NA-PAEK, blend