[an error occurred while processing this directive] ς ₳ 2013, 30(2) 94-98 DOI: ISSN: 1000-3851 CN: 11-1801/TB

¼ | ¼ | | [ʒ ӽ] [ꞁ]

ڼ 虲 PVC ?

ٙ , , ÷, , ´

₳ ₳ 虲 ₳ Ꮬ o , 710054

ᏧȻи-Ƨ (PVC)Þ ,
PVC e ? PVC XRD
SEM TEM -PVC/PVC c ϵ Ľû, o 侄 ۶ ,
Ꝇ20 nm, 10-
PVC/PVC c ϵ нϴ Ϊ2%ᶯ , Ϊ4.6 10^7 cm, V ϵ Ç , 輤 Ϊ10%ᶯ , , 4.1 10^4 cm

? PVC и ? c

Exfoliating interlayer and nanocompositing of graphite with PVC through solid state shear compounding technology

LI Kanshe, ZHANG Shengyan, NIU Hongmei, KANG Jie, CHEN Chuangqian

College of Chemistry and Chemical Engineering, Polymer Research Institute, Xi an University of Science and Technology, Xian 710054, China

Abstract: The graphite-polyvinylchloride(PVC) compounding powders were successfully prepared by solid state shear compounding technology (S^3C) at ambient temperature, and then the graphite-PVC/PVC nanocomposites were processed by moulding. The structure and antistatic performance of graphite-PVC compounding powder and nanocomposites prepared through S^3C based on pan-milling were investigated by XRD, SEM, TEM and electrical resistivity tests. The results show that the conductivity properties of graphite/PVC nanocomposites prepared through S^3C based on pan-milling 20 cycles at ambient temperature are remarkably improved. The surface resistivity of graphite-PVC/PVC nanocomposites with 2% mass fraction of graphite is 4.6 10^7 cm. The surface resistivity of graphite-PVC/PVC nanocomposites with 10% mass fraction of graphite reaches lowest as 4.1 10^4 cm. The strip flake of graphite particles with thickness less than 20 nm and the aspect ratio of 10 times disperses homogeneously in the PVC matrix.

Keywords: PVC graphite solid state shear compounding technology (S^3C) panmilling nanocomposites antistatic

n 2012-02-03 09-06-2012 **? ? ? ? ?** 減

DOI:

:

13115 ¹ ش 2009)? ? ˥ZDKG-62); ỹ C ? ? ? ص ҿ

V̈ : ٩ , ‘ , , o : ỹ ы " E-mail: likanshe@xust.edu.cn

:

Email: likanshe@xust.edu.cn

Supporting info
PDF(1747KB)
[HTML]
o[PDF]
o

ψ
ц

Email Alert
.
Ꙍ

?
PVC

и

? c

٩

÷

´

PubMed
Article by LI Kanshe
Article by ZHANG Shengyan
Article by NIU Hongmei
Article by KANG Jie
Article by CHEN Chuangqian

o ٦

[1] ? , . ú ? ? ? ? ? ? ? ? ? ? ? ? ? Ç Ꝇ PVC? Ö [J]. Ƨ , 2011, 38(8): 22-27. Zhou Bailiang, Li Huixiang. Importance of antiflaming and antistatic pipes in coal mines and application of antiflaming and antistatic PVC pipes [J]. Polyvinyl Chloride, 2011, 38(8): 22-27.
[2] ц , . , ỹ ϵ o ꜝ[J]. , 2009, 30(3): 73-78. Sun Yebin, Zhang Xinmin. Research progress of conductive filled polymer composites [J]. Special Purpose Rubber

Products, 2009, 30(3): 73-78.
[3] Srivastava A, Singh V, Chandra A, Witte K, Scherer U W, Singh T V. Electrical conductivity studies of swift heavy ion modified PVC and PVC-PANI composite [J]. Nuclear Instruments and Methods in Physics Research B, 2006, 245: 277-280.
[4] Potts J R,Dreyer D R, Bielawski C W, Ruoff R S. Graphene-based polymer nanocomposites [J]. Polymer, 2011, 52: 5-25.
[5] 廩, , ü , . ? ? ? ? ? ? / ' ƨ 縴 c [J]. c ᴧ , 2012, 29(2): 59-64. Cao Qinghua, Meng Qingrong, Jia Weican, et al. Conductive composites of high surface area carbon black/polypropylene [J]. Acta Materiae Compositae Sinica, 2012, 29(2): 59-64.
[6] ⁹ , , Й . PP/ ? c ϵ o [J]. ᴧ , 2005(3): 393-397. Li Kanshe, Wang Qi, Chen Yinghong. Electrical conductivity of PP/Graphite composites [J].Acta Polymerica Sinica, 2005(3): 393-397.
[7] Sengupta R, Bhattacharya M, Bandyopadhyay S, Bhowmick A K. A review on the mechanical and electrical properties of graphite and modified graphite reinforced polymer composites [J]. Progress in Polymer Science, 2011, 36: 638-670.
[8] , , , . ᴛ /ƨ c ϵ [J].
c ᴧ , 2012, 29 (1): 8-15. Cheng Bo, Qi Shuhua, He Dong, et al. Fabrication and properties of graphite nanosheet/poly(vinyl chloride) composites [J]. Acta Materiae Compositae Sinica, 2012, 29(1): 8-15.
[9] , .ᴧ Ö : й, 95111258.9 . 2001-04-19. Xu Xi, Wang Qi. A pan-milling type of equipment: China, 95111258.9 . 2001-04-19.
[10] , ?? ? ? ? ? ? ? ”? ? /? ? ? ﷺ? .? ? ,? ? ? ? ? ? ,? ? ⁹ c ? ? ? ? ? ? :
й, 02133588.5 .2005-08-24. Wang Qi, Li Kanshe, Ao Ningjian, et al. Nanocomposites of polymer/layer-organic fillers and their preparation method through solid state shearing based on pan-milling: China, 02133588.5 . 2005-08-24.
[11] , . ᴧ Ö ڀ ў e Ö [J].
ᴧ У ᴧ ᴧ , 1997, 18(7): 1197-1201. Wang Qi, Xu Xi. A pan-milling type of equipment and its application in developing polymer materials [J]. Chemical Journal of Chinese Universities, 1997, 18(7): 1197-1201.
[12] Awad W H, Beyer G, Benderly D, et al. Material properties of nanoclay PVC composites [J]. Polymer, 2009, 50: 1857-1867.

e

1 ? , , ?O , . / ư ϵ ϵ [J].
c ᴧ , 2009,26(4): 107-110
2 , , , ? ? ? , , л¯ , .Mo_5Si_3-$MoSi_2$
/SiC ¿ Ï [J]. c ᴧ , 2009,26(4): 119-125
3 ,?,,.OMMT/EVA-g-PUc [J].
c ᴧ , 2009,26(2): 54-58
4 , . SiO_2 ; ƨ [J]. c ᴧ , 2009,26(01): 48-53
5 Ω, , ü, , ? . h ﷺ /
黶 [J]. c ᴧ , 2009,26(5): 86-92
6 , , , ? . CCCW? ? ? ά c ϵ 缊
oy[J]. c ᴧ , 2009,26(6): 138-142
7 , j , ³5 , , · , . / 縴 c ϵ 븈
Ï[J]. c ᴧ , 2008,25(1): 35-39
8 , ¾ , ÷, 鶫, ,
. ¶ $CoFe_2O_4/SiO_2$ c ' Ь ў [J]. c ᴧ , 2008,25(3): 144-148
9 , Й , Ѧ , , .e C/C c ? ? ? ? ? ? Ö ЧÖ[J].
c ᴧ , 2008,25(6): 130-135
10 , Й , Ѧ , , .e C/C c ? ? ? ? ? ? Ö ЧÖ[J].
c ᴧ , 0,(): 130-
11 O , ,
, , , .??? ? ? ά? ˷ Ʊ c ϵ Ï
[J]. c ᴧ , 2007,24(5): 44-49
12 , , o , , ? . / ″ Ыl c ϵ ᴧ [J].
c ᴧ , 2007,24(4): 58-62
13 , u , , , ɻ . - / ' 縴
ϱ [J]. c ᴧ , 2007,24(4): 63-66
14 δ , , , , ÿ ÿ , . ?
c oɻ[J]. c ᴧ , 2005,22(6): 1-8
15 , u , , . TiO_2 PP ᴧ o [J].
c ᴧ , 2005,22(5): 100-106
16 , 獩, . / ? 踴 c ϵ ll
: / ? 踴 c ϵ [J]. c ᴧ , 2005,22(
6): 21-26
17 , , , . ȧ ? ? ? ? ? /? c Θ Ь ў
[J]. c ᴧ , 2005,22(6): 9-14
18 ,,ü.APP/PER/ENÏ[J].
c ᴧ , 2005,22(5): 52-59
19 , , .C/C c þ ? ? Ï[J].
c ᴧ , 2004,21(6): 93-97
20 , , ά , J B Doneet, T K
Wang. STM o? ? ? ? ? ? ? ? ? ά ᴧ ? ? ? [J]. c ᴧ , 2004,21(
1): 7-11

21 , , , .? ? ? ? ? ? ? ? ? ? ? ?- л ?
c є o[J]. c ᴧ , 2004,21(1): 114-118
22 · , . ?? ? ? ? ? ? ? ? /? ? ? ? ? ڭ c є Íj ЧÖ[J].
c ᴧ , 2004,21(4): 8-12
23 ¹ , , . / Ʊ· ?
c є [J]. c ᴧ , 2003,20(5): 57-62
24 , , , , ջ , . ƨ /SiO_2 ?
c є o[J]. c ᴧ , 2003,20(5): 77-81
25 δ , ββ, , , .? ? ? ? ? ? ? ? ? ? ? Þ /ά ?
c c ÏŸ [J]. c ᴧ , 2003,20(2): 30-34
26? ? ? , .TiO_2/? ? ? ? ? ? ? c є o [J]. c ᴧ , 2002,19(4): 11
-13
27 , , , , . - c є İ? ? ? o [J].
c ᴧ , 2002,19(1): 41-45
28 , ξ , , C .? ? ? ? ? ? ?/ά ?
c є o[J]. c ᴧ , 2002,19(1): 117-121
29 , , , , . ?? ? ? ? ? ? ? ? ? ”? ? /? ? ? ۺ
c є oչ[J]. c ᴧ , 2001,18(3): 5-9
30 , , .h , є [J]. c ᴧ ,
2001,18(3): 22-25
31 , , ? ? ? ? . ά c є Ŀ? ?? ? ¸ [J]. c ᴧ ,
2001,18(2): 18-21
32 , , , . ᴧ ư ᴧ ? ? ? o [J].
c ᴧ , 1998,15(2): 42-47
33 Ω, , . G_{rP}?SiC_P/ZA27 Ы c ï o [J].
c ᴧ , 1998,15(1): 56-61
34 廢,?ǿ, C .? ? ? ƨ / 븤 幭 oy [J]. c ᴧ ,
1999,16(2): 46-51
35 , ᴧ , ά , ά . P PTFE
c є o[J]. c ᴧ , 1999,16(4): 58-63
36 , , . / oy c [J].
c ᴧ , 2006,23(6): 163-167
37 . e Ti_3SiC_2 / Al ? c [J]. c ᴧ , 2006,23(6):
134-137
38 , , , . ' /
ƨ c є ᴧ [J]. c ᴧ , 2006,23(4): 36-40
39 , , , к '? /? ? ? ? ? ? .? ? ,?? ? ? ,? ¾? ,? ч
ƨ ? ? ? ? ? j [J]. c ᴧ , 2006,23(3): 44-48
40 Гђћ , , · , C .SiO_2 / ?
c є ᴧ ? ? ? [J]. c ᴧ , 2006,23(3): 54-59
41 , , , Й .Ni-20Fe
Al_2O_3 c є ᴧ [J]. c ᴧ , 2006,23(3): 103-
107
42 , , ᵛ . л / ? c є [J].
c ᴧ , 2006,23(2): 77-81
43 , , , . c ȷ ŋ
[J]. c ᴧ , 2010,27(5): 73-78
44 , .SiC_P/ Ni ? c є [J]. c ᴧ , 2005,22(4): 68-
74
45 , , 츴 , ᴧ ƽ , , . / / PVC
c [J]. c ᴧ , 2007,24(3): 63-71
46 ơ, , 콠, , .є Ni-
c C ת[J]. c ᴧ , 2005,22(3): 92-97
47 , 첨, , , , . ά CVI ? /
? c є [J]. c ᴧ , 2005,22(3): 55-59
48 ¹ , , , 鱷,
. ά / ? c є [J].
c ᴧ , 2005,22(1): 6-10
49 , γ, . ƨ / ? c є , [J].
c ᴧ , 2005,22(1): 15-21
50 , , , .MCM-41
ζ̣ c ? ? ? ? ? ? ? ? ? Ÿ [J]. c ᴧ , 2005,22(2): 27-33
51 , , .u12/ c є [J].
c ᴧ , 2005,22(2): 52-56
52 , , ? ¸ , , . л ? є /LDPE ?
c є [J]. c ᴧ , 2010,27(6): 45-52
53 'ı , , , , , .C/C [J].
c ᴧ , 2010,27(6): 64-69
54 , , , ? . / '
ƨ c ᴍ ᴧ [J]. c ᴧ , 2010,27(6): 70-75
55 ? , · , ε , Hirofumi Migahara, Keiseku Ogi, Michiru
Sakamoto.c є Ï[J]. c ᴧ , 1994,11(4): 39-43
56 , . ?? ? ƨ / ? ? c є [J].
c ᴧ , 2011,28(4): 40-45

57 , ?? ,? , ,
л . ƨ ƨ /HDPE ½ѽ Ѫ Ў [J]. c Ѫ ,
2011,28(4): 70-76
58 , , , - .EG/Na
Xc є Ц[J]. c Ѫ , 2011,28(4): 162-166
59 ? ? , , ζ , . Т / ƨ c є [J].
c Ѫ , 2012,29(1): 8-15
60 , , ы, .[J].
c Ѫ , 2012,29(1): 35-42
61 , , ÷, , ÷,
. Mg $CoFe_2O_4/SiO_2$ ę ′ Ъ Ў [J]. c Ѫ , 2012,
(2): 98-102
62 , ? , ? ¬ , ƨƨ′ ′ .? ? ? ? ? ? ? ? 繭 є [J].
c Ѫ , 2012,(2): 103-108
63 ΘΘ, , Ъ. ƨ ? ? ? ? / ƨ 縴
c є [J]. c Ѫ , 2012,(4): 36-41
64 uᶜ , , , . ƨ ч ш ¶ [J].
c Ѫ , 2012,(5): 24-31
65 , Φ? , ? , , . ƨ ? ? ? ? ? ?
? ? ? ? ? ? ? ? ? ? c є [J]. c Ѫ , 2012,(5): 53-60
66 , ά , . ά 洎 o [J]. c Ѫ ,
1997,14(4): 70-74
67 , ? ? , , ¹ , . ? c ϡ 钞 (GICs)
[J]. c Ѫ , 1996,13(3): 53-59
68 , ? ? , , ¹ , . ? c ƨ 钞 (GICs) 绯
Ѫ j o[J]. c Ѫ , 1996,13(2): 53-59
69 , , .CPVCάє Ïo[J].
c Ѫ , 1993,10(2): 77-83
70 γ , , . / c ? ? ? ? ? ? Ў [J]. c Ѫ ,
1992,9(3): 43-46
71 , . . ά/? ? ? ? ? ? c є [J].
c Ѫ , 1992,9(2): 55-61
72 Й, , ? , . /? ? ? ? ? c є [J].
c Ѫ , 2013,30(2): 70-74
73 , , . ƨ / ш ¦ c є o ɻ[J]. c Ѫ , 2013,30(1):
14-21
74 , , ÷, , , . ƨ / ˋ
c є [J]. c Ѫ , 2013,30(1): 22-26
75 , , , h , , . ƨЇ ƨ / ˋ
縴 c [J]. c Ѫ , 2013,30(1): 27-31

反馈人		邮箱地址	
反馈标题		验证码	9940