

• • , • • ,
• • , , « »

2,4,6-

Kinetic conformities of interacting 2,4,6-threebromphenilmaleimids with furfurylglycidyl ether and polyethelenpolyamins and their polimerization in the presence of complex onium catalists forming network polymers are examined.

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,
.
,
,
,
,
[1, 2]
« ».
[3].
1961 1998 . .

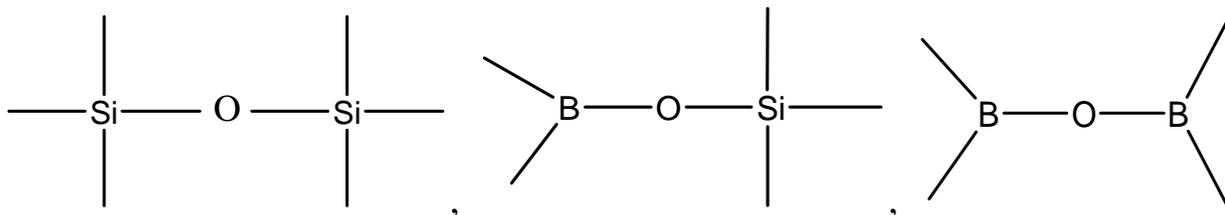
MoO₃, SnO₂, CaCO₃ . [4]
[5 – 10].

Create Lake Polymers Additives

Br – – Sb

[11].

Si, B и O в виде химических связей



[12].

[13, 14].

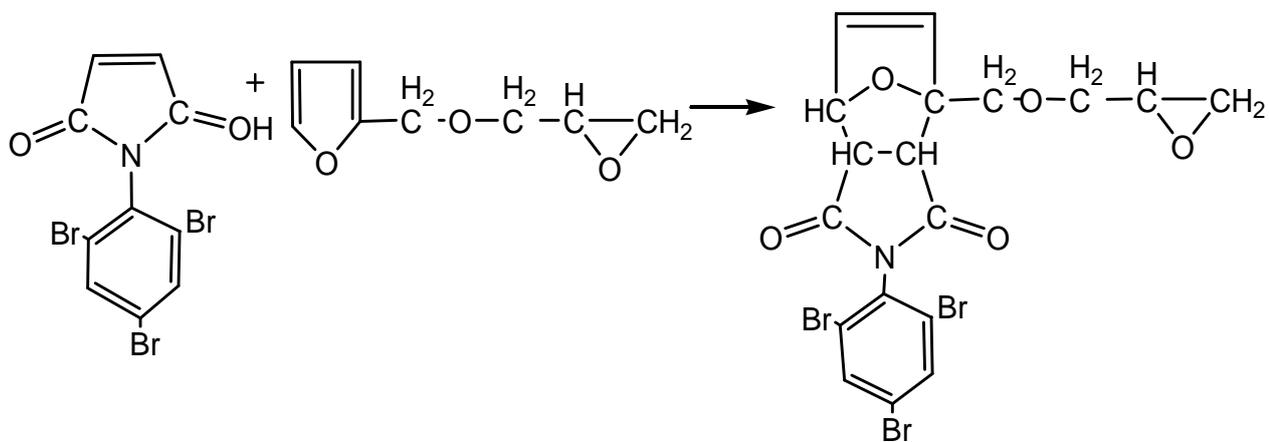
2,4,6-

[15],

[16]

() [17].

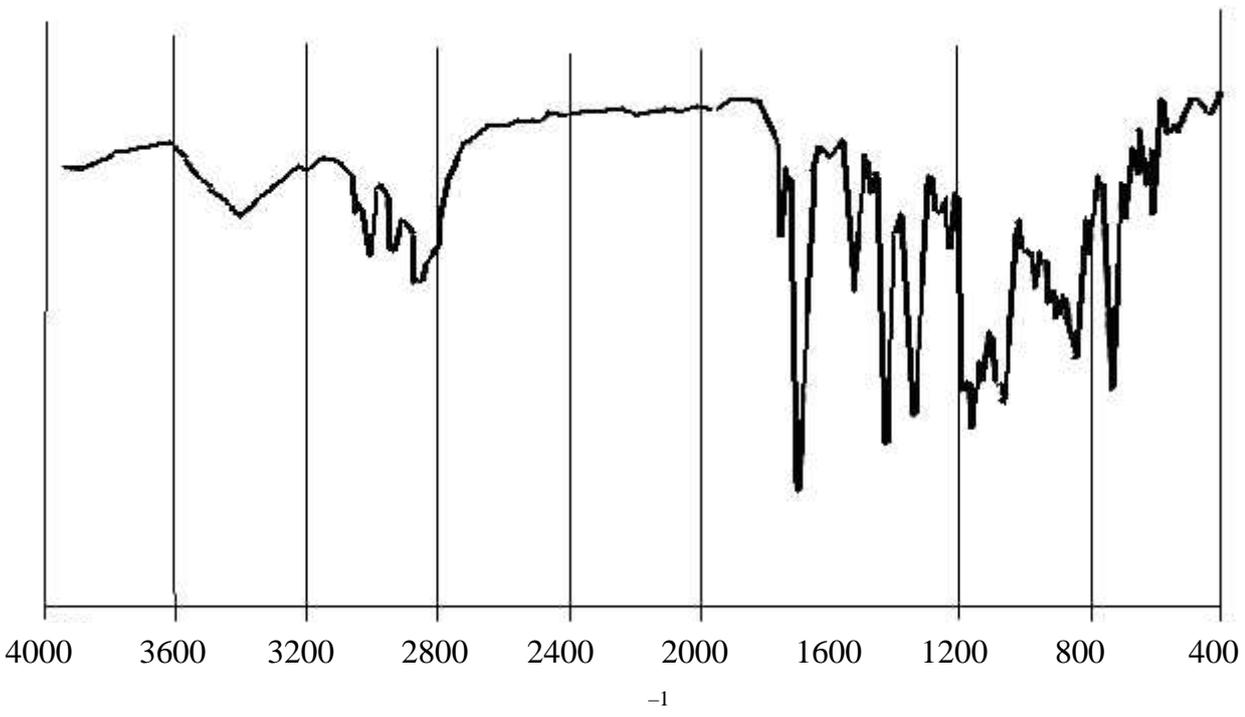
6 , 60 30 .



- 7,83 %,

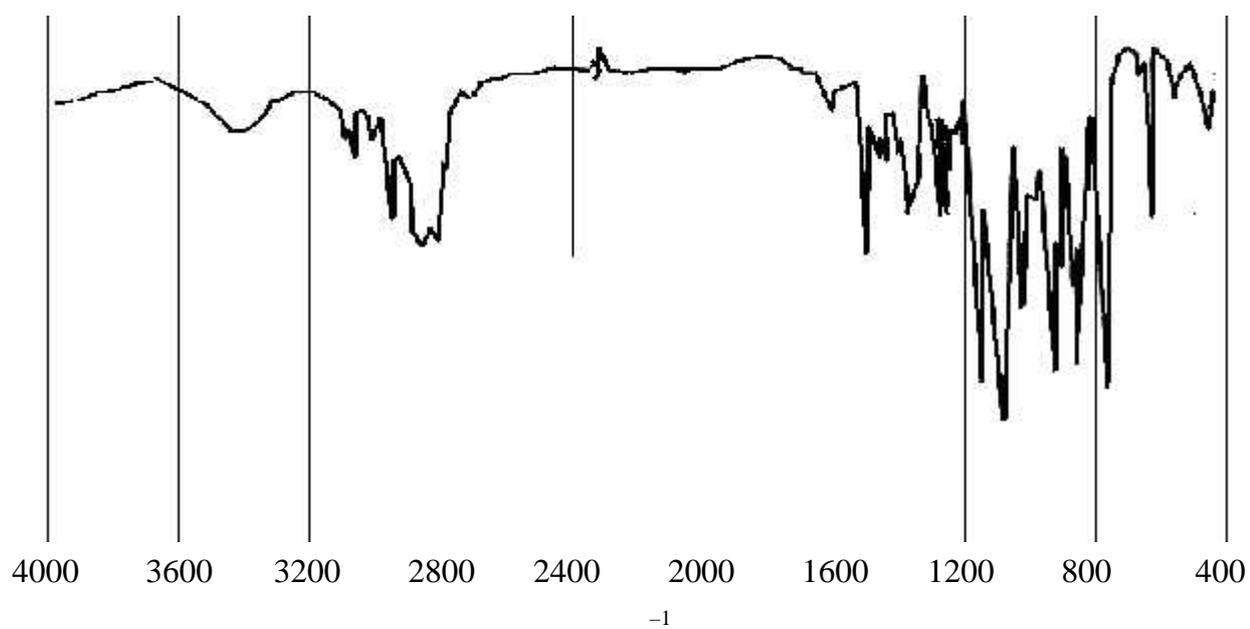
- 7,51 %.

2,4,6- (2,4,6-)
 - 3000-3500 ⁻¹,
 600 ⁻¹ 1500 ⁻¹
 () (. 1, 2, 3) [18].
 720 ⁻¹ 2,4,6-

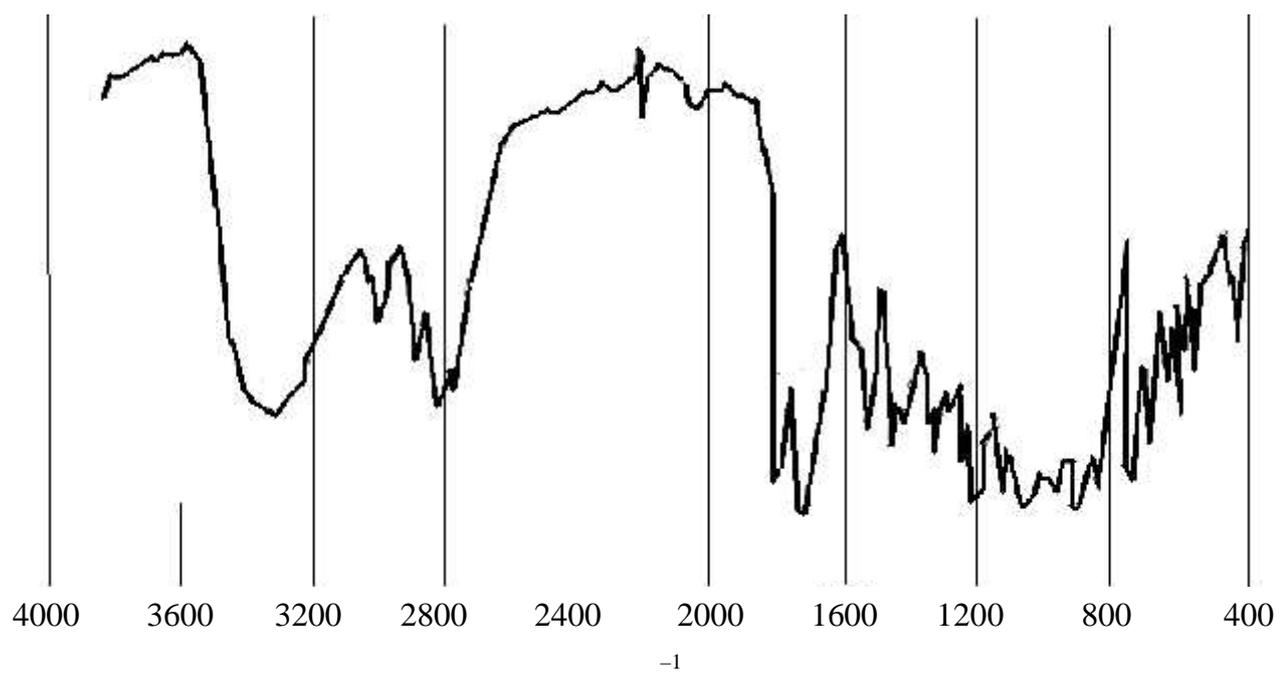


. 1. - 2,4,6-

() [19, 20].
 - 2,4,6-
 ().
 2,4,6-
 ()
 : R₄N·FeCl₄, R₄ ·FeCl₄, R₄N·ZnCl₃·H₂O, R₄ ·ZnCl₃·H₂O, [R₄N]₂ Zn₂Cl₆,
 [R₄]₂ Zn₂Cl₆.



.2. -

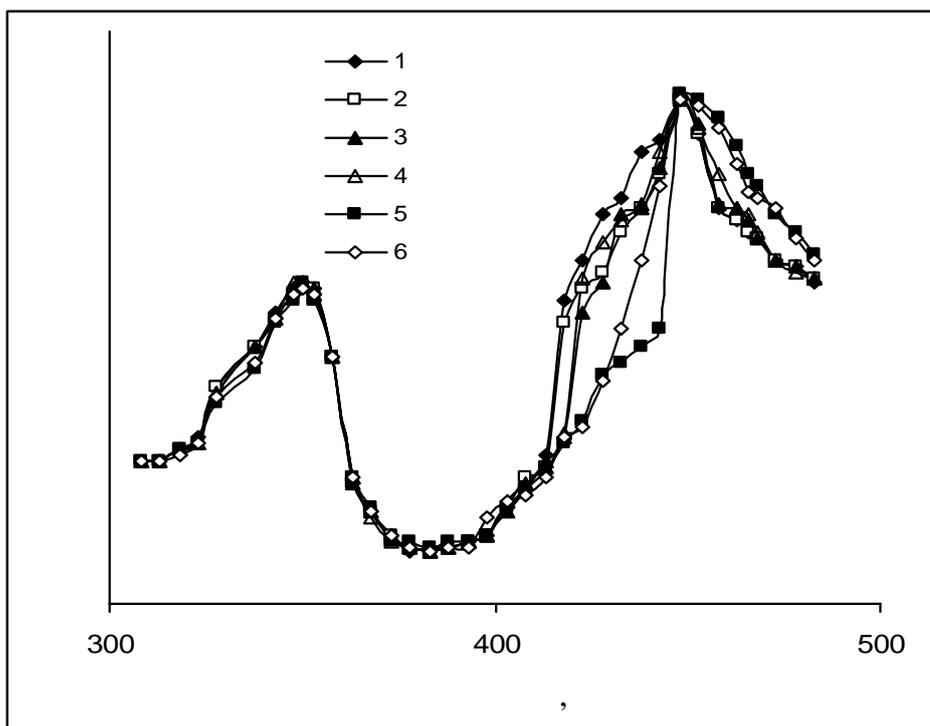


.3. -

.4

, . . .





. 4.

- :
- | | |
|---|--|
| 1. $(2,5)_3\text{CH}_2\text{PhN FeCl}_4$, | 2. $(2,5)_3\text{CH}_2\text{PhP FeCl}_4$, |
| 3. $[(2,5)_3\text{CH}_2\text{PhN}]_2\text{Zn}_2\text{Cl}_6$, | 4. $[(2,5)_3\text{CH}_2\text{Ph}]_2\text{Zn}_2\text{Cl}_6$, |
| 5. $(2,5)_3\text{CH}_2\text{PhN ZnCl}_3 \cdot 2$, | 6. $(2,5)_3\text{CH}_2\text{Ph ZnCl}_3 \cdot 2$ |

2,4,6-

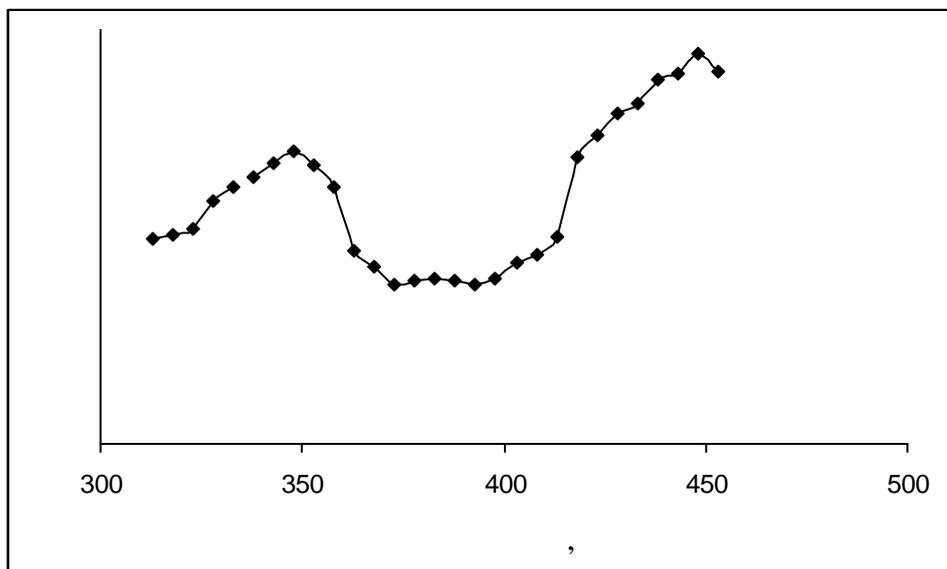
.1.

1.

- 2,4,6-
(1 : 1)

	=150 ⁰	-			%
		.	/ ²	,	
$(2,5)_3\text{CH}_2\text{PhN FeCl}_4$	5	0,68	5	25	0,94
$(2,5)_3\text{CH}_2\text{PhP FeCl}_4$	5	0,65	5	25	0,93
$[(2,5)_3\text{CH}_2\text{PhN}]_2\text{Zn}_2\text{Cl}_6$	5	0,64	5	25	0,91
$[(2,5)_3\text{CH}_2\text{Ph}]_2\text{Zn}_2\text{Cl}_6$	5	0,65	5	25	0,92
$(2,5)\text{CH}_2\text{PhN ZnCl}_3 \cdot 2$	5	0,65	5	25	0,94
$(2,5)_3\text{CH}_2\text{Ph ZnCl}_3 \cdot 2$	5	0,65	5	25	0,94

2,4,6- . 5 ()
 - 8 .. 1 ..
 . 2.



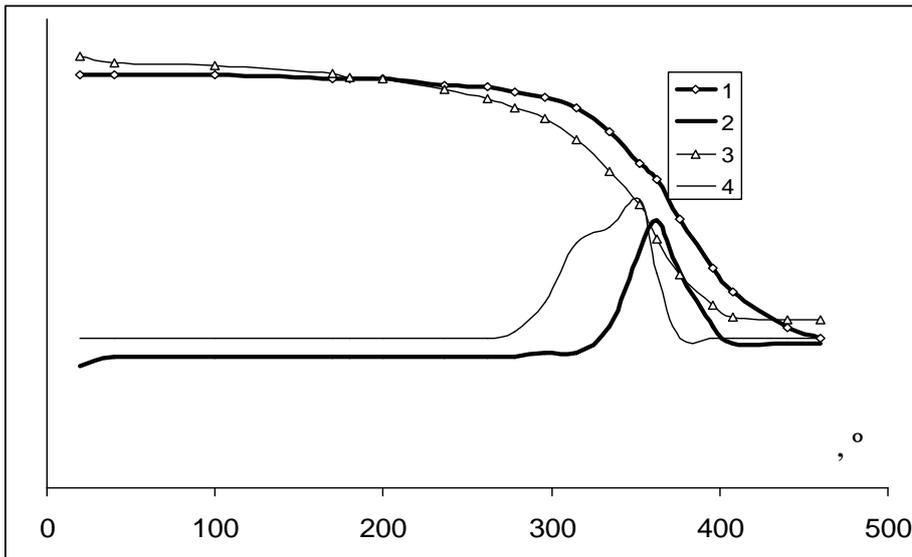
. 5. 2,4,6- ,

2.

2,4,6- -

	=150 ⁰	-			%
		.	/ ²	,	
(2 5) ₃ CH ₂ PhN ZnCl ₃	5	0,65	10	20	0,95
(2 5) ₃ CH ₂ PhP FeCl ₄	5	0,64	10	20	0,94
[(2 5) ₃ CH ₂ PhN] Zn ₂ Cl ₆	5	0,65	10	20	0,92
[(2 5) ₃ CH ₂ Ph] Zn ₂ Cl ₆	5	0,65	10	20	0,93
(2 5) ₃ CH ₂ PhN ZnCl ₃ 2	5	0,64	10	20	0,91
(2 5) ₃ CH ₂ Ph ZnCl ₃ 2	5	0,64	10	20	0,92

. 6 () : -
 - 60 90 -
 80 -
 150 220 180 .



. 6. :
 1 - 2,4,6- + + - , 2 -
 3 - 2,4,6- + + + - , 4 -

[21] - -

- . 1 2 - -
1. :
 - 2,4,6- -
 2. -
 3. -
 4. , -

: 1. ITE: i -
. 2006, 4, - . 37 – 41 2.
. // 4 . - , 17-
19 . 2000. . 2000, - . 92 – 106 3. . . . i i // -
III, i i // , 2002, - . 166. 4. *Kicko-
Walczar Ewa*. Study on flame retardant unsaturated polyester resins an overview of past and new
developmens. 38 th. Macromolecular IUPAC Symposium, Warsaw, 9-14 July, 2000 Book Abste. Vol. 3.
5. Flamm sechutz miGt phoshororganischesa Vrbindungen // *Kunststoffe*, 1998, 88 , . - . 84. 6.
. , 2003, 5, - . 87. 7. *Kicko-Walczar
Ewa*. inetics of thermal decomposition of unsaturated polyester resint with redused flammability.
J. Appl. Polym. Sci. 2003, 88, 13, - . 2851 – 2857. 8. Flame minus retardant styrene resin composition.
1449879 , 7, 08L25/04. Dai-Ichi Kogyo Seiyau Co Ltd. Onishi Hideaki,
02767883.8; . 04.06.2002. . 25.08.2004. 9. Technical conferens «Ecology and life protec-
tion industrial – transport complexes togliathi city. 11-14 Sept. ELPIT – 2003. 10. Flame retardants – a
quid to the basis. *Plast. Addit. and Compound.* 2003, 5, 2, - . 18, . 11.
. // 4 . - , 17-19 . 2000.
. 2000, - . 47. 12. 04.16-19 . 169 .
. 2001124700/ 4, , 7. 09 161/14. -
. 2001124700/04; .
07.09.2001; . 27.08.2003. 13. Shange fstrength by heat treatment of laminated composit prepred
from evlar cloth and furan resin. *Kawamura Kazuro, Ozawa Shinichiro, Aruga Atsushi, Nippon Radaku
Kaishi*. *J. Chem. Soc. Jap.* 2000, 1, - . 55 – 60, 11 . . 17 . 14. Gel pearmetion
chromotographi stady of the kinetics of condensation of furfuryl alcohol in THF solution. *Mokoena T.T.,
Dolam-
ba A.A., Keikotlhaile B.M. S. Aft*. *J. Chem.*, 1999, 52, 2 – 3, - . 73 – 78. . 15. . . //
, 1960, - . 243.
16. -
. // ITE: i 2001, 2, - . 79 – 83. 17. -
. -
. // i « ».- -
. « , ».- : « ».- 2006. -; 4, - . 169 – 176.
18. // - « », , 1967, - 529 . 19. -
. // - « », - .,
1966, - 768 . 20. -
() // , -
, 2003, - 515 . 21. *Gandini A., Belgasem M.N.* Furan in polimer chmistry // *Proq. Polym.
Sci.* 1997, v. 22, - . 1203 – 1379.

27.09.07