

General expertise

Preparation of new organophosphorus compounds with high content of phosphorus followed by the incorporation of these compounds into epoxy resin systems in order to investigate the phosphorus effect in terms of thermal stability, flame-retardant and mechanical properties of modified epoxy resins; phosphorus-based materials (polyphosphates, polyphosphonates, polyphosphoesters, phosphonated poly(meth)acrylates, polyphosphazene etc.) applicable in the biomedical field; chemical modification of some conventional and/or natural polymers (polyvinyl alcohol, polyethylene glycol, cellulose etc.) by reactions with phosphorus compounds with the aim to induce biomedical applicability; preparation of mixtures of natural polymers modified with other functional polymers; Structural characterization (FTIR, H-NMR, P-NMR), thermal analyses (TGA, DSC, TGA-FTIR, TGA-MS-FTIR), investigation of liquid crystalline properties (DSC, XRD, PLM); Monomers and polymers with improved flame retardancy.



Curriculum Vitae

Personal Information

First name, Surname: **Tăchiță, VLAD-BUBULAC**

Address: Aleea Tudor Neculai, nr. 23, bl. 953, sc. B, et. 2, ap. 7, Iasi, Romania

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Email(s): tvlab@icmpp.ro, tvlab@yahoo.com

Date/Place of Birth: 05 March 1977, Tecuci, Galati, Romania

Professional Experience

<i>Period</i>	February 2014 – Present
<i>Position</i>	Senior Researcher III
<i>Topics</i>	-The preparation of new organophosphorus compounds with high content of phosphorus followed by the incorporation of these compounds into epoxy resin systems in order to investigate the phosphorus effect in terms of thermal stability,

	flame-retardant and mechanical properties of modified epoxy resins; -Phosphorus-based materials (polyphosphates, polyphosphonates, polyphosphoesters, phosphonated poly(meth)acrylates, polyphosphazene etc.) applicable in the biomedical field.
<i>Period</i>	December 2008 – February 2014
<i>Position</i>	Scientific Researcher
<i>Topics</i>	-Chemical modification of some conventional and/or natural polymers (polyvinyl alcohol, polyethylene glycol, cellulose etc.) by reactions with phosphorus compounds with the aim to induce biomedical applicability; -Preparation of mixtures of natural polymers modified with other functional polymers.
<i>Period</i>	March 2001 – December 2008
<i>Position</i>	Research Assistant
<i>Institution</i>	“Petru Poni” Institute of Macromolecular Chemistry, Iasi, Romania
<i>Topics</i>	Synthesis and characterization of new monomers, polymers and copolymers containing phosphorus in the main and/or side chain; Polyesters, copolyesters and copolyimides with thermotropic liquid crystalline properties; Basic structural characterization (FTIR, H-NMR, P-NMR), thermal analyses (TGA, DSC, TGA-FTIR, TGA-MS-FTIR), investigation of liquid crystalline properties (DSC, X-ray diffraction, polarized light microscopy); Monomers and polymers with improved flame retardancy.

Education and training

<i>Period</i>	1 – 29 May 2012, 13 May – 12 June 2013 (2 months)
<i>Position</i>	Post-doc
<i>Institution</i>	AIDICO Technological Institute of Construction Marble Technical Unit, Novelda, Alicante, Spain
<i>Topics</i>	Flame retardancy of new epoxy resins containing phosphorus compounds for practical applications
<i>Period</i>	3 – 31 October 2011 (1 month)
<i>Position</i>	Post-doc
<i>Institution</i>	Federal Institute for Materials Research and Testing (BAM), Berlin, Germany
<i>Topics</i>	Performing measurements upon polymeric powders or films on the Dynamic Mechanical Analyser and TGA-MS-FTIR equipments
<i>Period</i>	2010 – 2013
<i>Position</i>	Post-doc at “Petru Poni” Institute of Macromolecular Chemistry through European Project „Cristofor I. Simionescu” Postdoctoral Fellowship Programme
<i>Institution</i>	“Petru Poni” Institute of Macromolecular Chemistry
<i>Topics</i>	Polymers with phosphoester functions for biomedical applications
<i>Period</i>	1 March 2006 – 30 May 2006

<i>Position</i>	Doctoral fellowship from “Petru Poni” Institute of Macromolecular Chemistry through RAINS European Project
<i>Institution</i>	Fraunhofer Institute, Potsdam-Golm, Germany
<i>Topics</i>	Synthesis of low-molecular compounds with liquid crystalline properties
<i>Period</i>	2001 – 2007
<i>Qualification</i>	PhD Degree. PhD Thesis: “New phosphorus containing polymers. Synthesis and study of the properties”
<i>Institution</i>	Romanian Academy, “Petru Poni” Institute of Macromolecular Chemistry, Iasi, Romania
<i>Period</i>	2000 – 2002
<i>Qualification</i>	Master’s Degree, Diploma Nr. 0000752. Master’s Degree Thesis: „Synthesis, properties and application of some phosphorus containing macromolecular compounds”
<i>Institution</i>	“Alexandru Ioan Cuza” University, Faculty of Chemistry, Chemistry and Biochemistry of the Heterocycles Compounds Section, Iasi, Romania
<i>Period</i>	1996 – 2000
<i>Qualification</i>	Bachelor, Diploma Nr. 0046410. Graduation Thesis: „Synthesis, structure and reactivity of some pyrimidine ylides”
<i>Institution</i>	“Alexandru Ioan Cuza” University, Faculty of Chemistry, Chemistry and Biochemistry of the Heterocycles Compounds Section, Iasi, Romania

Scientific Profile

(1) **2 books**; (2) **4 book chapter**; (3) **2 patents**; (4) **63 scientific papers** published in national or international journals or in proceedings of national and international symposia (**49 papers & h-index 13**, according to RID profile URL: <http://www.researcherid.com/rid/B-7399-2012>); (5) **4 conferences**, **47 oral presentations** and **49 posters** at different national or international scientific conferences; (6) **7 national research projects**, **1 (PD)** as a **Project Leader** and **5** (ANSTI, ACADEMY-MCT, CNCSIS (2 projects), CEEX-ET (1), PN-II-RU-TE (1) as a member of the team; (7) **2 european projects** (1 as post-doc and 1 as a member of implementation team); (8) member of an **inter-academic bilateral** collaboration (Romania-Bulgaria).

List of scientific publications

Articles

1.O. Petreuş, **T. Bubulac**.

La synthese et la caracterisation de quelques polyesters comportant plusieurs atoms d’halogens. *Buletinul Ştiinţific al Universităţii Politehnica Timişoara*, **46** (60), 1-2, 155-160, **2001**.

2.O. Petreuş, G. Cazacu, C. Vasile, **T. Bubulac**.

Noi biomateriale pe bază de celuloză și derivați. I. Noi metode de sinteză a celulozei fosforilate și utilizarea sa ca biomaterial.

Celuloză și Hârtie, **52** (3), 20-25, **2003**.

3.O. Petreuş, G. Cazacu, C. Vasile, **T. Bubulac**.

Noi biomateriale pe bază de celuloză și derivați. II. Utilizarea celulozei și a derivaților ei pentru confecționarea de membrane cu proprietăți îmbunătățite.

Celuloză și Hârtie, **52** (4), 17-23, **2003**.

4.O. Petreuş, **T. Bubulac**, I. Petreuş, G. Cazacu.

Reaction of some phosphorous compounds with cellulose dissolved in aqueous alkaline solutions.

Journal of Applied Polymer Science, **90** (2), 327-333, **2003**.

5.O. Petreuş, **T. Vlad-Bubulac**, G. Cazacu.

Aspecte privind reacția alcoolului polivinilic cu acidul fosforos.

Materiale Plastice (Bucharest), **42** (2), 115-119, **2005**.

6.O. Petreuş, **T. Vlad-Bubulac**, C. Hamciuc.

Synthesis and characterisation of new polyesters with enhanced phosphorus content.

European Polymer Journal, **41** (11), 2663-2670, **2005**.

7.**T. Vlad-Bubulac**, C. Hamciuc, O. Petreuş.

Synthesis and properties of some phosphorus-containing polyesters.

High Performance Polymers, **18** (3), 255-264, **2006**.

8.C. Hamciuc, E. Hamciuc, **T. Vlad-Bubulac**, O. Petreuş.

Aromatic polyethers containing 1,3,4-oxadiazole rings.

Revue Roumaine de Chimie, **51** (1), 53-59, **2006**.

9.O. Petreuş, **T. Vlad-Bubulac**, C. Hamciuc.

Studiul termoanalitic privind efectul unor insecticide organofosforice asupra rășinii diglicidileter-bisfenol A.

Materiale Plastice (Bucharest), **43** (1), 20-23, **2006**.

10.**T. Vlad-Bubulac**, C. Hamciuc, O. Petreuş, M. Bruma.

Synthesis and properties of new phosphorus-containing poly(ester-imide)s.

Polymers for Advanced Technologies, **17** (9-10), 647-652, **2006**.

11.C. Hamciuc, **T. Vlad-Bubulac**, I. Sava, O. Petreuş.

New phosphorus-containing copolyesters.

Journal of Macromolecular Science: Pure and Applied Chemistry, **43** (9), 1355-1364, **2006**.

12.C. Hamciuc, **T. Vlad-Bubulac**, O. Petreuş, G. Lisa.

Kinetics of thermal degradation in nonisothermal conditions of some phosphorus-containing polyesters and polyesterimides.

European Polymer Journal, **43** (3), 980-988, **2007**.

13.O. Petreuş, **T. Vlad-Bubulac**, C. Hamciuc.

New polyesterimides with phosphorus-containing cyclic bulky groups.

High Performance Polymers, **20** (6), 588-600, **2008**.

14.**T. Vlad-Bubulac**, J. Buchs, A. Kohlmeier, M. Bruma, D. Janietz.

Mesophase Morphologies of Hydrogen-Bonded Complexes of Biphenyl-Substituted Diamino-1,3,5-triazines with Semiperfluorinated Benzoic Acids.

Chemistry of Materials, **19** (18), 4460-4466, **2007**.

15.**T. Vlad-Bubulac**, C. Hamciuc, O. Petreuş.

Aromatic-aliphatic phosphorus-containing copolyesters.

Materiale Plastice (Bucharest), **44** (3), 199-203, **2007**.

16.O. Petreuş, C. Ciobanu, C. Hamciuc, **T. Vlad-Bubulac**, D. Roşu.

Proprietăţile mecanice ale unor răşini polimerice folosite în compounduri cu insecticide.

Materiale Plastice (Bucharest), **44** (2): 108-111, **2007**.

17.**T. Vlad-Bubulac**, C. Hamciuc, O. Petreuş, G. Lisa.

Thermal stability of some phosphorus containing polyesters and polyesterimides.

Materiale Plastice (Bucharest), **44** (4): 284-288, **2007**.

18.C. Hamciuc, **T. Vlad-Bubulac**, O. Petreuş, G. Lisa.

Aromatic polyesters and polyesterimides containing phosphorous cyclic bulky groups.

Polymer Bulletin, **60** (5): 657-664, **2008**.

19.C. Hamciuc, **T. Vlad-Bubulac**, O. Petreuş, G. Lisa.

Thermal degradation kinetics of some phosphorus containing aromatic polyesters.

Buletinul Institutului Politehnic din Iaşi, Tome **52** (3-4), 43, **2007**.

20.**T. Vlad-Bubulac**, C. Hamciuc, O. Petreuş.

Poliesteri rezistenţi la flacără cu proprietăţi de cristale lichide.

Zilele Facultăţii de Inginerie Chimică şi Protecţia Mediului, Ediţia a V-a: „*Materiale şi procese inovative*”, Volum de lucrări, Iaşi, 19-21 Nov., ISBN: 9789736212550, p. 133-138, **2008**.

- 21.O. Petreuş, C. Hamciuc, **T. Vlad-Bubulac**, D. Serbezeanu.
Aspecte comparative privind poliesterimide cu fosfor în lanţ, respectiv în catena laterală.
Zilele Facultăţii de Inginerie Chimică şi Protecţia Mediului, Ediţia a V-a: „*Materiale şi procese inovative*”, Volum de lucrări, Iaşi, ISBN: 9789736212550, 19-21 Nov., p. 189-194, **2008**.
- 22.C. Hamciuc, **T. Vlad-Bubulac**, O. Petreuş.
Studiul comparativ al unor poliesteri care conţin fosfor.
Zilele Facultăţii de Inginerie Chimică şi Protecţia Mediului, Ediţia a V-a: „*Materiale şi procese inovative*”, Volum de lucrări, Iaşi, 19-21 Nov., ISBN: 9789736212550, p. 401-405, **2008**.
- 23.**T. Vlad-Bubulac**, C. Hamciuc.
Aliphatic-aromatic copolyesters containing phosphorous cyclic bulky groups.
Polymer, **50** (10), 2220 – 2227, **2009**.
- 24.**T. Vlad-Bubulac**, C. Hamciuc.
Synthesis and properties of new aromatic copolyesters containing phosphorous cyclic bulky groups.
Polymer Engineering and Science, **50** (5), 1028 –1035, **2010**.
- 25.**T. Vlad-Bubulac**, C. Hamciuc, O. Petreuş.
Synthesis and Characterization of Some Polyesters and Poly(ester-imide)s Based on Bisphenol-A Derivatives.
High Performance Polymers, **22** (3), 345 – 358, **2010**.
- 26.D. Serbezeanu, **T. Vlad-Bubulac**, C. Hamciuc, M. Aflori.
Structure and Properties of Phosphorous – Containing Thermotropic Liquid Crystalline Aliphatic – Aromatic Copolyesters.
Macromolecular Chemistry and Physics, **211** (13), 1460 – 1471, **2010**.
- 27.C. Hamciuc, E. Hamciuc, D. Serbezeanu, **T. Vlad-Bubulac**, M. Cazacu.
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Polymer International, **60** (2), 312–321, **2011**.
- 28.C. Hamciuc, E. Hamciuc, D. Serbezeanu, **T. Vlad-Bubulac**.
Thermal and optical properties of some phosphorus-containing poly(1,3,4-oxadiazole-ester-imide)s.
Polymers for Advanced Technologies, **22** (12), 2458–2468, **2011**.
- 29.D. Serbezeanu, **T. Vlad-Bubulac**, C. Hamciuc.

Synthesis and characterization of new aromatic-aliphatic poly(ester-imide)s containing phosphorus.

Revue Roumaine de Chimie, 55 (10), 667–672, **2010**.

30. **T. Vlad-Bubulac**, D. Serbezeanu, C. Hamciuc.

New Phosphorus-Containing Polyesterimides. Synthesis and Characterization.

Materiale Plastice (Bucharest), 47 (4), 440–445, **2010**.

31. D. Serbezeanu, **T. Vlad-Bubulac**, C. Hamciuc, M. Aflori.

Synthesis and Properties of Novel Phosphorus – Containing Thermotropic Liquid Crystalline Copoly(ester imide)s.

Journal of Polymer Science Part A: Polymer Chemistry, 48 (23), 5391–5403, **2010**.

32. D. Serbezeanu, **T. Vlad-Bubulac**, C. Hamciuc.

Synthesis and Characterization of New Phosphorus-containing Poly(ester-imide)s.

High Performance Polymers, 22 (8), 916–929, **2010**.

33. D. Serbezeanu, **T. Vlad-Bubulac**, C. Hamciuc.

New Phosphorus-Containing Copoly(ester-amide-imide). Synthesis and Characterization.

Materiale Plastice (Bucharest), 48 (1), 7–11, **2011**.

34. D. Serbezeanu, **T. Vlad-Bubulac**, C. Hamciuc, M. Aflori, M. Bruma.

Synthesis and phase transitions of thermotropic liquid crystalline copolyesters with phosphorus-containing pendent bulky groups.

Materiale Plastice (Bucharest), 48 (2), 117–122, **2011**.

35. C. Hamciuc, I.-D. Carja, E. Hamciuc, **T. Vlad-Bubulac**, V.-E. Musteata.

Silica-containing fluorinated poly(amide-imide) hybrid films.

High Performance Polymers, 23 (5), 362–373, **2011**.

36. D. Serbezeanu, I.-D. Carja, **T. Vlad-Bubulac**, C. Hamciuc, M. Brumă.

Comparative study of phosphorus-containing polymers with high performance properties.

Revue Roumaine de Chimie, 57 (4-5), 393–399, **2012**.

37. I.-D. Carja, C. Hamciuc, E. Hamciuc, **T. Vlad-Bubulac**, G. Lisa.

New highly thermostable aromatic polyamides with pendant phthalonitrile groups.

Macromolecular Research, 20 (10), 1011–1020, **2012**.

38. I.-D. Carja, D. Serbezeanu, **T. Vlad-Bubulac**, C. Hamciuc, M. Bruma.

Synthesis and liquid crystalline behavior of phosphorus-containing aliphatic-aromatic copoly(ester imide)s.

Polymer Bulletin, 68 (7), 1921–1934, **2012**.

39.I.-D. Carja, C. Hamciuc, E. Hamciuc, **T.Vlad-Bubulac**, D. Serbezeanu, G. Lisa.

Phosphorus-containing poly(ester imide) with pendant phthalonitrile groups.

Revue Roumaine de Chimie, 57 (6), 623–628, **2012**.

40.E. Hamciuc, C. Hamciuc, I.-D. Carja, **T. Vlad-Bubulac**, M. Ignat.

Phthalonitrile-containing poly(amide imide)s with nanoactuation properties.

Polymer Engineering and Science, 53 (2), 334–342 **2013**.

41.**T. Vlad-Bubulac**, D. Serbezeanu, C. Hamciuc, O. Petreuş, I.-D. Carja, G. Lisa.

Preparation and Phase Behavior of Blends of Polysulfone-based Polymers with Phosphorous-containing Smectic-A Liquid Crystals.

Polymer Engineering and Science, 53 (6), 1209–1216, **2013**.

42.**T. Vlad-Bubulac**, D. Serbezeanu, A.-M. Oprea, I.-D. Carja, C. Hamciuc, M. Cazacu.

Preparation and characterization of new hydrogels based on poly(vinyl alcohol)/phosphoester – chondroitin sulphate.

Central European Journal of Chemistry, 11, 446–456, **2013**.

43.C. Hamciuc, I.-D. Carja, E. Hamciuc, **T.Vlad-Bubulac**, M. Ignat.

Phthalonitrile-containing aromatic polyimide thin films with nano-actuation properties.

Polymers for Advanced Technologies, **24** (2), 258–265, **2013**.

44.I.-D. Carja , C. Hamciuc, **T. Vlad-Bubulac**, M. Bruma, I.A. Ronova.

Effect of conformational parameters on physical properties of polymers containing pendant phenoxyphthalonitrile substituents.

Structural Chemistry, **24** (5) 1693–1703, **2013**.

45.**T. Vlad-Bubulac**, A.-M. Oprea, D. Serbezeanu, I.-D. Carja, C. Hamciuc.

In vitro release of metoprolol tartrate from poly(vinyl alcohol)/phosphoester – chondroitin sulfate semi-IPNs.

Revista de Chimie, **64** (6), 663–666, **2013**.

46.C. Hamciuc, D. Serbezeanu, I.-D. Carja, **T. Vlad-Bubulac**, V.-E. Musteata, V. Forrat Perez, C. Guillem Lopez, A. M. Lopez Buendia.

Effect of DOPO units and of polydimethylsiloxane segments on the properties of epoxy resins.

Journal of Materials Science, **48** (24), 8520–8529, **2013**.

47.I.-D. Carja, D. Serbezeanu, G. Lisa, **T. Vlad-Bubulac**, C. Hamciuc.
Thermal degradation and kinetic studies of new flame-retardant phosphorus-containing polymers with liquid crystalline properties.

International Journal of Polymer Analysis and Characterization, **19** (4), 372-382, **2014**.

48.I.-D. Carja, D. Serbezeanu, **T. Vlad-Bubulac**, C. Hamciuc, A. Coroaba, G. Lisa, C. Guillem Lopez, M. Fuensanta Soriano, V. Forrat Perez, M. D. Romero Sanchez.

A straightforward, eco-friendly and cost-effective approach towards flame retardant epoxy resins.

Journal of Materials Chemistry A, **2** (38), 16230-1624, **2014**.

49.I.-D. Carja, D. Serbezeanu, **T. Vlad-Bubulac**, C. Hamciuc, V. Forrat Perez, M. D. Romero Sanchez, C. Guillem Lopez, M. Fuensanta Soriano.

Miscibility behavior of epoxy thermosets loaded with an oligophosphonate.

Journal of Applied Polymer Science, **132** (16), 41822, **2015**.

50.C. Hamciuc, **T. Vlad-Bubulac**, D. Serbezeanu, I.-D. Carja, E. Hamciuc, G. Lisa, V. Forrat Perez.

Environmentally friendly fire-resistant epoxy resins based on a new oligophosphonate with high flamer etardant efficiency.

RSC Advances, **6** (27), 22764-22776, **2016**.

51.C. Hamciuc, E. Hamciuc, **T. Vlad-Bubulac**, S. Vlad, M. Asandulesa, A. Wolinska-Grabczyk.
Silica-containing polyetherimide hybrid films based on methyltriethoxysilane as precursor of inorganic network.

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52.M. Homocianu, D. Serbezeanu, I.-D. Carja, A. M. Macsim, **T. Vlad-Bubulac**, A. Airinei.
Synthesis and characterization of new dual stimuli-responsive bisazobenzene derivatives.

RSC Advances, **6** (55), 49980-49987, **2016**.

53.**T. Vlad-Bubulac**, D. Serbezeanu, I.-D. Carja.

Synthesis and characterization of novel main chain bisazobenzene polyphosphonates.

Advanced Topics in Optoelectronics, Microelectronics, and Nanotechnologies VIII, edited by Marian Vladescu, Razvan Tamas, Ionica Cristea, Proc. of SPIE Vol. 10010,100100G · © **2016** SPIE · CCC code: 0277-786X/16/\$18 · doi: 10.1117/12.2243339

54.D. Serbezeanu, **T. Vlad-Bubulac**, D. Rusu, G. Gradisteanu Pircalabioru, I. Samoila, S. Dinescu, M. Aflori.

Functional Polyimide-Based Electrospun Fibers for Biomedical Application.
Materials 12 (19), 3201, **2019**.

55.D. Serbezeanu, I.-D. Carja, A. Nicolescu, M. Aflori, **T. Vlad-Bubulac**, M. Butnaru, R.-F. Damian, S. Dunca, S. Shova.

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56.C. Hamciuc, **T. Vlad-Bubulac**, D. Serbezeanu, I.-D. Carja, E. Hamciuc, I. Anghel, V. Enciu, I.-E. Șofran, G. Lisa.

New fire resistant epoxy thermosets: nonisothermal kinetic study and flammability behavior.

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Books

T. Vlad-Bubulac, C. Hamciuc, O. Petreus. Polimeri heterociclici cu fosfor în catena laterală.
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Book Chapters

I. Sandu, V. Vasilache, I. G. Sandu, O. Petreus, **T. Vlad-Bubulac**.

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Eco-friendly phosphorus flame retardants: from rational design towards applications. In:

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T. Vlad-Bubulac, C. Hamciuc, D. Serbezeanu, I.-D. Carja, V. J. Forrat Pérez.

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T. Vlad-Bubulac, C. Hamciuc, O. Petreuş, M. Brumă.

New phosphorus-containing poly(ester-imide)s.

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T. Vlad-Bubulac, C. Hamciuc, O. Petreuş, M. Brumă.

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Proceedings of Second Bilateral Symposium „Functional Polymers”, Potsdam, Germania, **2006**.

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C. Hamciuc, A.M. Ipate, **T. Vlad-Bubulac**, E. Hamciuc, G. Lisa, L. Okrasa.

Thermal and electrical behavior of some poly(1,3,4-oxadiazole-ether)s.

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C. Hamciuc, A.M. Ipate, E. Hamciuc, **T. Vlad-Bubulac**, O. Petreuş, G. Lisa.

Poly(1,3,4-oxadiazole-ether)s. Synthesis and characterisation.

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I.-D. Carja, D. Serbezeanu, **T. Vlad-Bubulac**, C. Hamciuc

Thermal degradation and burning behavior of a commercial epoxy resin blended with an organophosphonate

Proceedings of Thermophysical and Mechanical Properties of Advanced Materials (THERMAM 2014), 12-15 June 2014, Izmir, Turkey, 153-160 (**2014**), ISBN: 978-605-84726-1-7

T. Vlad-Bubulac, D. Serbezeanu, C. Hamciuc, I. D. Carja

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