

Davy-Louis Versace

Assistant Professor

Date of birth: 11/07/1980

Citizenship: French

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Education

- 2008 Ph.D., PhotoPolymer Chemistry, *Mulhouse University (France)*
2005 M.S., Polymer Chemistry and surface modification, *Mulhouse University (France)*
2005 Engineer degree, National High School of Chemistry, *Mulhouse (France)*

Academic Positions

- 2010-date Assistant Professor, *Polymer Research Laboratory, Thiais (France)*
2009-2010 Post-Doctoral Fellow, Center for Education and Research on Macromolecules, *Liege University (Belgium)*
2008-2009 Post-Doctoral Fellow, *Mulhouse University (France)*
2005-2008 Graduate Student, *Mulhouse University (France)*

Research Interests

- New photochemical process for the synthesis of metal and metal oxide nanoparticles
- Development of new photocurable biobased monomers
- Design, synthesis and characterization of new biomaterials for antibacterial activities
- Photochemical modification of the surface of polyester films and *3-D electrospun polyester scaffolds* for biological applications

Educational Activities

- Tuition on Surface modification methods and photopolymerization processes, M.S. degree "Molecules & Materials, speciality: Surface Chemistry", *Université Paris-Est Créteil, France (2010-date)*
- Tuition on atomistic properties, B.S. degree, *Université Paris-Est Créteil, France (2010-date)*
- (Co-)advisor for 2 Ph.D. graduate students, 4 M.S. students, 9 undergraduate students

Publications over the last 6 years (2008-date)

A. Publications in peer-reviewed journals

A-1. A. CHEMTOB, **D. L. VERSACE**, C. BELON, C. CROUTXE-BARGHORN, S. RIGOLET. «**Concomitant Organic-Inorganic UV-Curing catalyzed by photoacids**», *Macromolecules*, **41**, 7390-7398 (2008);

A-2. **D. L. VERSACE**, O. SOPPERA, J. LALEVEE, C. CROUTXE-BARGHORN. «**Influence of zirconium propoxide on the radical induced photopolymérisation of hybrid sol-gel materials**», *New J. Chem.*, **32**, 2270-2278 (2008);

A-3. **D. L. VERSACE**, M. OUBAHA, R. COPPERWHITE, C. CROUTXE-BARGHORN, B.D. MacCRAITH. «**Waveguide fabrication in UV-photocurable sol-gel materials: influence of the photoinitiating system**», *Thin Solid Films*, **516**, 6448-6457 (2008);

A-4. R. COPPERWHITE, M. OUBAHA, **D. L. VERSACE**, C. CROUTXE-BARGHORN, B. D. MacCRAITH. «**The role of photoinitiator and chelating agent in the fabrication of optical waveguides from UV- photocurable organo-mineral sol-gel materials**», *J. Non-Cryst. Solids*, **354**, 3617-3622 (2008);

A-5. M. JIN, J.P. MALVAL, **D. L. VERSACE**, F. MORLET-SAVARY, H. CHAUMEIL, A. DEFOIN, X. ALLONAS, J.P. FOUASSIER. «**Intramolecular Energy Transfer based on Two-photon Absorption of Fluorene and Camphorquinone-containing Photoinitiator Systems**», *Chem. Comm.*, 6540-6542 (2008) / DOI: 10.1039/b808457b.

A-6. J.P. MALVAL, F. MORLET-SAVARY, H. CHAUMEIL, L. BALAN, **D. L. VERSACE**, M. JIN, A. DEFOIN. «**Photophysical properties and Two Photon Polymerization Ability of a Nitroalkoxystilbene Derivates**», *J. Phys. Chem. C*, **113**, 20812-20821 (2009);

A-7. **D. L. VERSACE**, A. CHEMTOB, C. CROUTXE-BARGHORN, S. RIGOLET. «**Synthesis of organosilica films through consecutive sol-gel process and cationic photopolymerization**», *Macromolecular Materials and Engineering*, **295**, 355-365 (2010);

A-8. Y. GUILLANEUF, D. BERTIN, D. GIGMES, **D. L. VERSACE**, J. LALEVEE, J. P. FOUASSIER, «**Toward Nitroxide Mediated PhotoPolymerization**», *Macromolecules*, **43**, 2204-2212 (2010) ;

A-9. J.P. MALVAL, M. JIN, L. BALAN, R. SCHNEIDER, **D. L. VERSACE**, H. CHAUMEIL, A. DEFOIN, O. SOPPERA. «**Photoinduced Size-Controlled Generation of Silver Nanoparticules Coated with Carboxylate-Derivatized Thioxanthenes**», *J. Phys. Chem. C*, **114**, 10396-10402 (2010);

A-10. **D. L. VERSACE**, M. A. TEHFE, J. LALEVEE, V. CASAROTTO, N. BLANCHARD, F. MORLET-SAVARY, J.-P. FOUASSIER. «**Silyloxyamines as sources of silyl radicals: ESR spin-trapping, laser flash photolysis investigation, and photopolymerization ability**», *J. Phys. Org. Chem*, **24**, 342-350 (2010).

A-11. **D. L. VERSACE**, J. LALEVEE, J. P. FOUASSIER, D. GIGMES, Y. GUILLANEUF, D. BERTIN. «**Photosensitized alkoxyamines as bicomponent radical photoinitiators**», *J. Polym. Sci. Part A-Polym. Chem.*, **48**, 2910-2915 (2010);

A-12. **D. L. VERSACE**, J. LALEVEE, J. P. FOUASSIER, Y. GUILLANEUF, D. BERTIN, D. GIGMES. «**Photodissociation rate constants of new light sensitive alkoxyamines**», *Macromol. Rapid Comm.*, **31**, 1383-1388 (2010);

A-13. Y. GUILLANEUF, **D. L. VERSACE**, D. BERTIN, J. LALEVEE, D. GIGMES, J. P. FOUASSIER, «**Importance of the position of the chromophore group on the dissociation process of light sensitive alkoxyamines**», *Macromol. Rapid Comm.*, **31**, 1909-1913 (2010);

- A-14. D. L. VERSACE**, Y. GUILLANEUF, D. BERTIN, J. LALEVEE, D. GIGMES, J. P. FOUASSIER, «**Structural effects on photodissociation of alkoxyamines**», *Org. Biomol. Chem.* **9**, 2892-2898 (2011)
- A-15. Y. GUILLANEUF, D. L. VERSACE**, D. BERTIN, J. LALEVEE, J. P. FOUASSIER, D. GIGMES, «**Light sensitive alkoxyamines : Applications in nitroxide mediated photopolymerization**», *Polymer preprints*, **52**, 527-528 (2011).
- A-16. C. DETREMBLEUR, D. L. VERSACE**, Y. PIETTE, M. HURTGEN, C. JEROME, J. LALEVEE, A. DEBUIGNE. «**Synthetic and mechanistic inputs of photochemistry into the bis-acetylacetonatocobalt-mediated radical polymerization of n-butyl acrylate and vinyl acetate**», *Polym. Chem.*, **3**, 1856-1866 (2012)
- A-17. E. RENARD, J. BABINOT, P. LEMECHKO, J. RAMIER, G. VERGNOL, D. L. VERSACE**, D. GRANDE, V. LANGLOIS. «**Harnessing biopolyesters in the design of functional materials for biomedical applications**», *Engineering of Biomaterials*, **113**, 19-22 (2012).
- A-18. G. LE FER, J. BABINOT, D. L. VERSACE**, V. LANGLOIS, E. RENARD, «**An Efficient thiol-ene chemistry for the preparation of amphiphilic PHA-based graft copolymers**», *Macromol. Rapid Comm.*, **33**, 2041-2045 (2012);
- A-19. D. L. VERSACE**, P. DUBOT, P. CENEDESE, J. LALEVEE, O. SOPPERA, J.-P. MALVAL, E. RENARD, V. LANGLOIS. «**Natural biopolymer surface of poly(3-hydroxybutyrate-co-3-hydroxyvalerate)-photoinduced modification with triarylsulfonium salts**», *Green Chemistry*, **14**, 788-798 (2012).
- A-20. P. LEMECHKO, J. RAMIER, D. L. VERSACE**, J. GUEZENNEC, C. SIMON-COLIN, P. ALBANESE, E. RENARD, V. LANGLOIS. «**Designing exopolysaccharide-graft-poly(3-hydroxyalkanoate) copolymers for electrospun scaffolds**», *Reactive and Functional Polymers*, **73**, 237-243 (2013).
- A-21. D. L. VERSACE**, J. RAMIER, D. GRANDE, S. ABBAD ANDALLOUSSI, P. DUBOT, N. HOBEIKA, J.-P. MALVAL, J. LALEVEE, E. RENARD, V. LANGLOIS. «**Versatile Photochemical Surface Modification of Biopolyester Microfibrous Scaffolds with Photogenerated Silver Nanoparticles for Antibacterial Activity**», *Advanced Healthcare Materials*, **2** (7), 1008-1018 (2013).
- A-22. D. L. VERSACE**, F. DALMAS, J.-P. FOUASSIER, J. LALEVEE. «**Zirconocene Dichloride: An efficient Cleavable Photoinitiator Allowing the in-Situ Production of Zr-Based Nanoparticles Under Air**», *ACS Macro Lett.*, **2** (4), 341-345 (2013).
- A-23. D. L. VERSACE**, J. RAMIER, J. BABINOT, P. LEMECHKO, O. SOPPERA, J. LALEVEE, P. ALBANESE, E. RENARD, V. LANGLOIS. «**Photoinduced modification of the natural poly(3-hydroxybutyrate-co-3-hydroxyvalerate) microfibrous surface with anthraquinone-derived dextran for biological applications**», *J. Mater. Chem. B*, **1**, 4834-4844 (2013).
- A-24. H. MOKDBEL, F. DUMUR, S. TELITEL, L. VIDAL, P. XIAO, D. L. VERSACE**, M.-A. TEHFE, F. MORLET-SAVARY, B. GRAFF, J.-P. FOUASSIER, D. GIGMES, J. TOUFAILY, T. HAMIEH, J. LALEVEE. «**Photoinitiating systems of polymerization and in-situ incorporation of metal nanoparticles into polymer matrices upon exposure to visible light : push-pull malonate and malononitrile based dyes**», *Polym. Chem.*, **4**, 5679-5687 (2013).
- A-25. C. LORENZINI, E. RENARD, J. BENSEMHOUN, J. BABINOT, D.-L. VERSACE**, V. LANGLOIS. «**High glass transition temperature bio-based copolyesters from poly(3-hydroxybutyrate-co-3-hydroxyvalerate) and isosorbide**», *Reactive and Functional Polymers*, **73**, 1656-1661 (2013).

A-26. D.-L. VERSACE, J. CEREZO BASTIDA, C. LORENZINI, C. CACHET-VIVIER, E. RENARD, V. LANGLOIS, J.-P. MALVAL, J.-P. FOUASSIER, J. LALEVEE. « **A Tris(triphenylphosphine)ruthenium(II) Complex as a UV Photoinitiator for Free-Radical Polymerization and in Situ Silver Nanoparticle Formation in Cationic Films** », *Macromolecules*, 46(22), 8808–8815 (2013).

A-27. D. L. VERSACE, J.-P. FOUASSIER, J. LALEVEE. « **The First Photochemical in-Situ Production of Ti Based Nanoparticles: a S_{H2} Strategy Using Bis(cyclopentadienyl)titanium dichloride (Cp_2TiCl_2)** », *Macromol. Rapid Comm.*, 35(8), 821–826 (2014).

A-28. G. M. MANECKA, J. LABRASH, O. ROUXEL, P. DUBOT, J. LALEVEE, S. ABBAD ANDALOUSSI, E. RENARD, V. LANGLOIS, **D. L. VERSACE**. « **Green photoinduced modification of natural poly(3-hydroxybutyrate-co-3-hydroxyvalerate) surface for antibacterial applications** », *ACS Sustainable Chemistry and Engineering*, 2(4), 996–1006 (2014).

A-29. M. JIN, H. HONG, J. XIE, J.-P. MALVAL, A. SPANGENBERG, O. SOPPERA, D. WAN, H. PU, **D.-L. VERSACE**, T. LECLERC, P. BALDECK, O. POIZAT, S. KNOFF. « **π -conjugated sulfonium-based photoacid generators: an integrated molecular approach for efficient one and two-photon polymerization** », *Polym. Chem.*, 5, 4747–4755 (2014).

A-30. C. LORENZINI, **D.-L. VERSACE**, C. GAILLET, C. LORTHIOIR, S. BOILEAU, E. RENARD, V. LANGLOIS. « **Hybrid networks derived from isosorbide by means of thiol-ene photoaddition and sol-gel chemistry** », *Polymer*, 55(17), 4432–4440 (2014).

A-31. M. JIN, J. XIE, J.-P. MALVAL, A. SPANGENBERG, O. SOPPERA, **D.-L. VERSACE**, T. LECLERC, H. PAN, D. WAN, H. PU, P. BALDECK, O. POIZAT, S. KNOFF. « **Two-photon lithography in visible and NIR ranges using multibranch-based sensitizers for efficient acid generation** », *J. Mater Chem C*, 2, 7201–7215 (2014)

A-32. D.-L. VERSACE, J. BOURGON, E. LEROY, F. DUMUR, D. GIGMES, J.-P. FOUASSIER, J. LALEVEE, « **Zinc complex based photoinitiating systems for acrylate polymerization under air; in situ formation of Zn-based fillers and composites** », *Polym. Chem.*, DOI: [10.1039/C4PY00716F](https://doi.org/10.1039/C4PY00716F)

A-33. C. LORENZINI, **D.-L. VERSACE**, J. BABINOT, E. RENARD, V. LANGLOIS, « **Biodegradable hybrid poly(3-hydroxyalkanoate)s networks through silsesquioxane domains formed by efficient UV-curing** », *React. Funct. Polym.*, 84, 53-59 (2014).

A-34. C. LORENZINI, A. HAIDER, I.-K. KANG, M. SANGERMANO, S. ABBAD-ANDALOUSSI, J. LALEVEE, E. RENARD, V. LANGLOIS, **D.-L. VERSACE**, « **Photoinduced Development of Antibacterial Materials derived from Isosorbide Moiety** », Major revision in *Biomacromolecules* (2015).

A-35. J. LALEVEE, J. BOURGON, R. POUPART, E. LEROY, J. CEREZO BASTIDA, J.-P. FOUASSIER, **D.-L. VERSACE**, « **Reduction of oxygen inhibition in radical polymerization of thin low viscosity films under a low light intensity** », *Journal of Polymer Science Part A Polymer Chemistry*, submitted (2015).

A-36. J. LALEVEE, R. POUPART, J. BOURGON, J.-P. FOUASSIER, **D.-L. VERSACE**, « **In-situ Production of Ti-based Nanoparticles in a Photopolymerizable Cationic Matrix** ». *Chem. Comm*, submitted (2015).

A-37. R. POUPART, J. BABINOT, J.-P. MALVAL, S. ABBAD ANDALOUSSI, E. RENARD, V. LANGLOIS, **D.-L. VERSACE**, « **Photoactivable surface of natural poly(3-hydroxybutyrate-co-3-**

hydroxyvalerate) for antibacterial applications», submission in ACS Biomaterials Science and Engineering (2015).

B. Publications in peer-reviewed proceedings

B-1. C. CROUTXE-BARGHORN, A. CHEMTOB, **D. L. VERSACE**, C. BELON, S. RIGOLET. «**Photopolymerizable Hybrid Sol-gel: New Opportunities for UV-cured Coatings**», *Proc. RadTech 2008, Chicago, USA*.

B-2. C. CROUTXE-BARGHORN, **D. L. VERSACE** «**Photopolymerization process in hybrid sol-gel coatings**», *Proc. Nano and Hybrid Coatings Conf., Developments of the Minute, Bruxelles, paper 12, (2007)*;

B-3. C. CROUTXE-BARGHORN, **D. L. VERSACE**, A. CHEMTOB «**Organic-inorganic hybrid coatings based on sol-gel chemistry and photopolymerization process**», *Proc. RadTech 2007, Vienne, CD : 15_InnovationsII, 05 Croutxe_Barghorn, (2007)*.

B-4. **D. L. VERSACE**, C. CROUTXE-BARGHORN. « **Sol-gel hybrides photoréticulables : compréhension et optimisation de l'étape photochimique pour l'obtention de matériaux performants** », *Proc. 2ème Conférence Pluridisciplinaire sur les Matériaux 2006, Dijon, Réf. CD 0615 Versace Davy L.pdf, (2006)*;

C. Book chapters

B-1. E. RENARD, **D.-L. VERSACE**, J. BABINOT, V. LANGLOIS, « **Tailoring Surface properties of Degradable Poly(3-hydroxyalkanoate)s for Biological Applications** », John Wiley and Sons, Inc. Publishers, Dr. Amar S. Singha (Editor)

B-2. J. BABINOT, E. RENARD, V. LANGLOIS, **D.-L. VERSACE**, « **UV-induced surface modifications of biomaterials and their applications** », John Wiley and Sons, invitation by J. LALEVEE, J.-P. FOUASSIER (editors), Invitation and submission on November 2014.

D. Seminars, oral and poster presentations

Invited Seminars (2010-date)

I-1. «**New routes for the modification of Natural Poly(3-hydroxybutyrate-co-3-hydroxyvalerate) Surface for Antibacterial Applications**», *Université Paris 13, Laboratoire CSPBAT-LBPS, May 12th, 2014*.

I-2. «**Photoinduced modification of Natural Poly(3-hydroxybutyrate-co-3-hydroxyvalerate) Surface for biological Applications**», *Université de Haute-Alsace, Laboratoire du Professeur Jacques Lalevée, April 29th, 2013*.

Oral presentations over the last 8 years (2005-date)

O-1. « **Nouveaux matériaux biocompatibles antibactériens** », National conference, Matériaux 2014, Montpellier, France, November 24th-28th, 2014.

O-2. « **High glass transition temperature bio-based copolyesters from poly(3-hydroxybutyrate-co-3-hydroxyvalerate) and isosorbide** », 2nd International conference on Bioinspired and Biobased Chemistry & Materials, Nice, France, October 15th - 17th, 2014.

O-3. «*Green Photoinduced Modification of Natural Poly(3-hydroxybutyrate-co-3-hydroxyvalerate) Surface for Antibacterial Applications*», 2nd International conference on Bioinspired and Biobased Chemistry & Materials, Nice, France, October 15th - 17th, 2014.

O-4. «*Synthèse de nouveaux matériaux issus de ressources renouvelables*», Journée des Doctorants, Thiais, France, March 6th, 2014.

O-5. «*Supports biocompatibles anti- ou pro-adhésifs à base de PHAs*», Oral presentation for the national AERES scientific committee, Thiais, February 11st, 2014.

O-6. «*Synthesis of Renewable Poly(HBHV-co-Isosorbide) Materials*», *Colloque "5^{ème} journée POL-IdF" GFP Ile-de-France (ENSAM)*, Paris, France, October 17th, 2013.

O-7. «*Synthesis of Renewable Poly(HBHV-co-Isosorbide) Materials*», 41^{èmes} Journées d'Etudes des Polymères (JEPO 41), Aussois, France, September 15th - 20th, 2013.

O-8. «*Design of functional bio-based polyesters*»; International conference on bioinspired and biobased chemistry and materials, Nice, France, October 3rd - 5th, 2012.

O-9. «*Harnessing biopolyesters in the design of functional materials for biomedical applications*»; Invited conference, France-Poland Seminar on Polymeric Biomaterials for Therapeutic Applications, Montpellier, France, November 17th-18th, 2011.

O-10. «*New Routes of Grafting Onto PHBHV Films: Surface Functionalization for Biological Applications*»; International conference on Biobased Polymers and Related Biomaterials, Gargnano, Lake Garda, Italy, May 29th - June 3rd, 2011.

O-11. «*Photopolymer nanocomposite hybrids: 3 examples based on cationic photopolymerization*», 2^{ème} journée du PMNA, Institut Charles Sadron, Strasbourg, France, September 18th, 2008.

O-12. «*Réticulation UV simultanée de systèmes organiques-inorganiques par des photoacides*»; National conference, Polyray 2008, Lyon, France, March 27th, 2008.

O-13. «*Organic-inorganic hybrid coatings based on sol-gel chemistry and photopolymerization process*»; International conference, RadTech 2007, Vienne, Austria, November 13rd - 15th, 2007.

O-14. «*Les Sol-Gel Hybrides photoréticulables*», National conference, Polyray 2007, Mulhouse, France, May 22nd - 23rd, 2007.

O-15. «*Photopolymerisation Process in Hybrid Sol-Gel Coatings* », 2nd International Nano & Hybrid Coatings Conference: "Developments of the minute", Bruxelles, Belgium, March 7th - 8th, 2007

O-16. «*Sol-Gel Hybrides photoréticulables: Compréhension et optimisation de l'étape photochimique pour l'obtention de matériaux performants*»; International conference, Matériaux 2006, Dijon, France, November 14th - 17th, 2006.

Poster presentations over the last 8 years (2005-date)

P-1. «*Nouveaux systèmes photochimiques pour la génération d'oxydes (ou nanoparticules) métalliques*» Montpellier, France, November 24th-28th, 2014.

P-2. «*Photoinduced-sized controlled generation of silver nanoparticles coated with carboxylate-derivatized thioxanthenes*», MAF 12, 12th Conference on methods and

applications of fluorescence, Spectroscopy, Imaging and Probes, Strasbourg, France, September 11st – 14th 2011.

P-3. «Impact of the chemical modifications of PHBV films on bacteria – surface interactions», Biopol2011, 3rd International Conference on Biodegradable and Biobased Polymers, Strasbourg, France, August 29th - 31st 2011.

P-4. «Waveguide fabrication process in UV-photocurable sol-gel materials: influence of the photoinitiating system», XIVth International Sol-Gel Conference, Montpellier, France, September 2nd - 7th, 2007

P-5. «Etude de l'adsorption et de la cristallisation de copolymères PS-POE à l'interface H₂O-PS», Conférence Nationale. Groupe Français des Polymères, Besançon, France, June 24th, 2005.