

CURRICULUM VITAE

AVEROUS Luc

Nationality: French.

Full Professor

Phone: +33 (0) 390 242 707 Fax: +33 (0) 390 242 714 E-mail: bio_polymers (at) yahoo.fr

Email: AverousL@ecpm.u-strasbg.fr

Address: **LIPHT-ECPM, University Louis Pasteur (ULP), 25 Rue Becquerel 67087 Strasbourg Cedex 2 (France)**

ECPM: Ecole Européenne de chimie, Polymères et Matériaux

LIPHT: Laboratoire d'Ingénierie des Polymères pour les Hautes Technologies (UMR CNRS 7165).

Website: <http://www-ecpm.u-strasbg.fr/Polymeres/Recherche>

Personal Website : <http://www.biodeg.net>

Key Words: Bioplastics (biopolymers, agro-resources ...), nanocomposites, plastics processing, formulation, polymers properties.

Graduate studies:

1982/84 : Engineer graduate delivered by High Polymers Application School / Ecole d'Application des Hauts polymères (E.A.H.P.) C. Sadron Institute, Strasbourg-France.

1984/85 : Studies of management in Institute of Entreprise Administration / Institut d'Administration des Entreprises (I.A.E.), Strasbourg-France.

1992/95 : Ph.D. from School of Mines of Paris / Ecole Nationale Supérieure des Mines de Paris-France.
Speciality: Science and material engineering.

2002 : "Aptitude Diploma for Research Direction" From URCA (Reims Champagne-Ardenne University) in Process engineering. Reims- France.

6th of July, 1995.

26th of February, 2002

Professional experience:

- Voluntary-Teacher of polymer chemistry (1985/87) in Engineer School of Sfax/Ecole Nationale d'Ingénieur de Sfax (Tunisia).

- Plastic Engineer in research and development (1988/89) Synthélabo, International Pharmaceutical Group (France).

- Research engineer (1990/91) in the University of Montpellier II, France (Macromolecular chemistry laboratory - Professor Schué F.).

- Research worker (1991/95) in the School of Mines of Alès/Ecole des Mines d'Alès, France

- Post-Doctoral position (1995/96) in "Ecole Polytechnique de Montréal" Canada. CRASP: Applied Polymer Research Centre (Dir. R. Gauvin).

- Post-Doctoral position (1996/97) at ESIEC "Ecole Supérieure d'ingénieurs en Emballage et Conditionnement" (Packaging Engineering School) in Reims. France

- Associated Professor (1997/2003) at ESIEC "Ecole Supérieure d'ingénieurs en Emballage et Conditionnement" (Packaging Engineering School) in Reims. France

Present Situation:

- **Full Professor** (since 2003) at ECPM (Ecole Européenne de Chimie, Polymères et Matériaux- European School for Chemistry, Polymers and Materials). ULP: University Louis Pasteur in Strasbourg. France
Laboratory: LIPHT (Laboratoire d'Ingénierie des Polymères pour les Hautes Technologies –Lab of Polymers Engineering for the high Technology). UMR CNRS N°7165.

Functions:

Co- Director of the Laboratory (LIPHT)
 In Charge of the internships for all ECPM students (2004/06)

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Referee: Polymer, Polymer International, Chemical Engineering and Processing, Biomacromolecules, Polym Eng & Sci, European Polymer Journal, Cereal Chemistry, Materials Chemistry and Physics, Bioresource Technology, Macromolecular Bioscience, Polymers & Polymer Composites, Macromolecular Materials & Engineering, Journal of Agricultural and Food Chemistry, Colloids and Surfaces A: Physicochemical and Engineering Aspects, Environmental Technology, International Polymer Processing, Progress in Polymer Science, Wiley's books

Research Topics:

Studies of the relationships between Materials, Process and Properties.
 - From 1996 to 2003: Study of multiphase systems (composites, blends, multilayers) based on agro-resources (starches, lignins, cellulose ...) and biopolyesters. Development of compostable packaging.
 - Since 2003: Bioplastics = Biopolymers and Biomaterials. Nano-biocomposites. Structuration of heterophase systems.

PhD Thesis supervision and management (9)

Master Thesis supervision (15)

Other:

- **Co-organisation symposium** « Biomaterials » PPS-23, Mai 2007 (Salvador- Brazil)
- **Scientific committee** of « International conference on biodegradable polymers and sustainable composites » October 2007 (Alicante-Spain)
- **Symposium** Organization "Materials from Natural/Renewal Resource" (MNRR) du MFMS 2008. 28-31 July 2008, Hong Kong (China)
- **Co-organisation symposium** "Green Polymers", 8th World Congress of Chemical Engineering (WCCE8). 23-27 August 2009 - Montréal.
- **Member of Editorial Board** "The Open Environmental Engineering Journal (Bentham Science Publishers)"...

Main publications and communications:

Publications in International Journals:

- 1- Avérous L., Quantin J.C., Lafon D., Crespy A. (1995), "Determination of 3D orientations in reinforced thermoplastics, using scanning electron microscopy." *Acta Stereologica (Image analysis & Stereology)*, Vol. 14/1, pp. 69-74.
- 2- Avérous L., Quantin J.C., Lafon D., Crespy A. (1996), "Granulometric characterization of short fiberglass in reinforced polypropylene. Relation to processing conditions and mechanical properties." *Int J. Polymer Analysis & Characterization*, Vol. 1, N°4, pp. 339-347.
- 3- Avérous L., Quantin J.C., Lafon D., Crespy A. (1996), "Morphological determinations of fiber composites." *Microscopy-Microanalysis-Microstructures*, Vol. 7, pp. 433-439.
- 4- Avérous L., Quantin J.C., Crespy A., Lafon D. (1997), "Evolution of the three-dimensional orientation of glass fibers in injected isotactic polypropylene." *Polym. Eng. Sci.*, Vol. 37, N°2, pp. 329-337.
- 5- Avérous L., Quantin J.C., Crespy A. (1998), "Determination of the microtexture of reinforced thermoplastics by image analysis." *Composites Science and Technology*, Vol. 58, N° 3-4, pp. 377-387.
- 6- Avérous L., Gauvin R. (1998), "Surface analysis of phenolic composites obtained by RTM Process.," *Journal of Reinforced Plastics and Composites*, Vol. 17, N°13, pp. 1167-1184.
- 7- Avérous L., Moro L., Dole P., Fringant C. (2000) "Properties of thermoplastics blends: starch-polycaprolactone." *Polymer*. Vol. 41, N°11, pp 4157-4167.
- 8- Avérous L., Fauconnier N., Moro L., Fringant C. (2000) "Blends of thermoplastic starch and polyesteramide: Processing and properties." *Journal of Applied Polymer Science*. Vol. 76, N°7, pp. 1117-1128.
- 9- Avérous L., Fringant C. (2001) "Association between plasticized starch and polyesters: processing and performances of injected biodegradable systems." *Polym Eng. Sci.*, Vol. 41, N°5, pp. 727-734.
- 10- Martin O., Avérous L. (2001). "Poly(lactic acid): plasticization and properties of biodegradable multiphase systems." *Polymer*, Vol 42, N° 14, pp. 6237-6247.
- 11- Avérous L., Fringant C., Moro L. (2001). "Starch-based biodegradable materials suitable for Thermoforming Packaging." *Starch/Starke*, Vol. 53, N°8, pp. 368-371.
- 12- Avérous L., Fringant C., Moro L. (2001). "Plasticized starch-cellulose interactions in polysaccharide composites." *Polymer*, Vol 42, N° 15, pp. 6571-6578.

- 13- Martin O., Schwach E., Avérous L., Couturier Y. (2001). "Properties of Biodegradable Multilayer Films Based on Plasticized Wheat Starch." *Starch/Starke*, Vol.53, N°8, pp. 372-380.
- 14- Boquillon N, Laignel B., Avérous L. (2002) "Development of biodegradable packaging from renewable resources". *Food, Cosmetics and Drug Packaging*, Vol.25, N°5, pp. 96-99.
- 15- Martin O, Avérous L (2002). "Comprehensive experimental study of a starch/polyesteramide coextrusion." *Journal of Applied Polymer Science*. Vol. 86, N°10, pp. 2586-2600.
- 16- Pouteau C., Dole P., Cathala B., Avérous L., Boquillon N. (2003) "Antioxidant properties of lignin in polypropylene", *Polymer Degradation and Stability*. Vol. 81, N°1, pp 9-18.
- 17- Martin O, Avérous L, Della Valle G (2003). "Inline determination of plasticized wheat starch viscous behaviour: Impact of processing." *Carbohydrate Polymers*. Vol. 53 N°2, pp. 169-182.
- 18- Avérous L., Boquillon N. (2004). "Biocomposites based on plasticized starch: thermal and mechanical behaviours". *Carbohydrate Polymers*. Vol. 56 N°2 pp. 111-122
- 19- Avérous L (2004). "Biodegradable multiphase systems based on plasticized starch: a review." *Journal of Macromolecular Science—Part C, Polymer Reviews*. Vol. C4, N°3, pp. 231-274
- 20- Le Digabel F., Boquillon N., Dole P., Monties B., Averous L. (2004) "Properties of thermoplastic composites based on wheat straw lignocellulosic fillers". *Journal of Applied Polymer Science*. Vol. 93 N°1 pp. 428-436.
- 21- Schwach E., Averous L. (2004). "Starch-based biodegradable blends: morphology and interface properties". *Polymer International*. Vol. 53 N°12 pp. 2115-2124.
- 22- Dole P., Avérous L., Joly C., Della Valle G., Bliard C. (2005) "Evaluation of PE-starch multilayers: Processing and properties." *Polym. Eng. Sci.*, Vol. 45 N°2, pp. 217-224.
- 23- Belard L., Dole P., Avérous L. (2005). « Current progress on biodegradable materials, based on plasticized starch ». *Australian Journal of Chemistry*, Vol. 58, N°6, pp 457-460.
- 24- Avérous L., Le Digabel F (2006) "Properties of biocomposites based on lignocellulose fillers" *Carbohydrate Polymers*, Vol. 66, N°4, pp 480-493.
- 25- Le Digabel F., Avérous L. (2006) "Effects of lignin content on the properties of lignocellulose-based biocomposites" *Carbohydrate Polymers*, Vol.66, N°4, pp 537-545.
- 26- Chivrac F., Kadlecová Z., Pollet E., Avérous L. (2006) "Aromatic Copolyester-Based Nano-Biocomposites: Elaboration, Structural Characterization and Properties" *Journal of Polymers and the Environment*, Vol. 14, N°4, pp. 393-401.
- 27- Chivrac F., Pollet E., Avérous L. (2007) "Non-isothermal crystallization behaviour of poly(butylene adipate-co-terephthalate) / clay nano-biocomposites" *Journal of Polymer Science Part B: Polymer Physics*. Vol. 45, N°13, pp. 1503-1510.
- 28- Avérous L. (2007). "Cellulose-based biocomposites: comparison of different multiphase systems" *Composite Interfaces*. Vol. 14, No. 7-9, pp. 787-805.
- 29- Hablot E., Bordes P., Pollet E., Avérous L. (2008) "Thermal and thermo-mechanical degradation of poly(3-hydroxybutyrate)-based multiphase systems" *Polymer Degradation & Stability*, Vol. 93, N°2, pp. 413-421
- 30- Chivrac F., Pollet E., Schmutz, M., Avérous L. (2008) "New approach to elaborate exfoliated starch-based nano-biocomposites" *Biomacromolecules*, Vol. 9 N°3 DOI: 10.1021/bm7012668
- 31- Pogodina N., Cerclé C., Avérous L., Thomann R., Bouquey M., Muller R. (2008) « Processing and Characterization of Biodegradable Polymer Nanocomposites. Detection of Dispersion State » *Rheologica Acta*, Vol. 47. . DOI 10.1007/s00397-007-0243-2.
- 32- Schwach E., Six JL., Averous L. (2008). "Biodegradable blends based on starch and poly(lactic acid): comparison of different compatibilization strategies" *Polymer International*. Accepted

Book chapters:

- Averous L., Quantin J.C., Lafon L., Crespy A. (1996) « Approche prévisionnelle dans la détermination du module d'élasticité de composites à matrice thermoplastique (Estimated approach in the determination of elastic modulus for composites with thermoplastic matrix) » dans « Journées nationales sur les composites N°10 », Eds : D. Baptiste D. & A. Vautrin; Edition AMAC, Paris, pp. 875-881. ISBN 2-9505117-3-2
- Avérous L., Fringant C., Martin O. (1999), "Coextrusion of biodegradable starch-based materials" dans « Biopolymer Science: Food and non food applications. », Edition Colonna P. et Guilbert S., INRA Editions, pp. 207-212. N° ISBN : 2-7380-0874-7.
- Avérous L. (2002) " Interactions between cellulose and plasticized wheat starch. – Properties of biodegradable multiphase systems." dans "Plant biopolymer Science: Food and non food applications", Editeurs : Renard D., Della Valle G. et Popineau Y., RSC Editions (Cambridge-UK) pp. 253-259. N° ISBN 0-85404-856-1. N° ISSN 0260-6291.
- Vilpoux O., Avérous L. (2003); « Plásticos a base de amido » Dans « Tecnologia, usos e potencialidades de tuberosas amiláceas Latino Americanas », Editeurs : Cereda M.P. et Vilpoux O. São Paulo: Fundação Cargill. Série Culturas de Tuberosas Latinoamericanas. Vol.3, Chapitre 18. pp. 499-529.
- Vilpoux O., Avérous L. (2004). « Starch-based plastics » dans « Technology, use and potentialities of Latin American starchy tubers », Collection LATIN AMERICAN STARCHY TUBERS. Eds: Cereda M.P. et Vilpoux O.; NGO Raízes and Cargill Foundation -São Paolo- Brazil. Book N°3, Chap 18. pp. 521-553
- Avérous L.(2008) "Polylactic acid: synthesis, properties and applications" dans "Monomers, Polymers and Composites from renewable resources" Eds: Belgacem N. et Gandini A., Elsevier Limited Publication. Chap. 21. pp 433-450. (ISBN-13: 978-0-08-045316-3)
- Avérous L.(2008) " Multilayer Coextrusion of Starch/Biopolyester" dans "Biodegradable Polymer Blends and Composites from Renewable Resources" Ed. Long Yu, John Wiley& Sons Inc., Chap. 18, Under press.

Patent:

- L. Avérous, C. Fringant, L. Moro, JC Prudhomme. Matériau biodégradable multicouche à base d'amidon ainsi que son procédé de fabrication. (Starch-based multilayer biodegradable material and its fabrication method). Frebch Patent. Dépôt : 1 Avril 1999. Publication : 16 Oct 2000. N° FR 2791603

Invited Communications (Outside congress):

- 1-Avérous L (2004), Recent developments on plasticized starch-based biodegradable materials. University of Queensland. Brisbane (Australie). 25 November, 2004.
- 2-Avérous L (2005), "Biodegradable polymeric materials based on renewable resources. From the elaboration to the characterization." ICT –Polymer Departement. Pragua (Czech Republic) 18 October, 2005.
- 3-Avérous L. (2005) "Nano-Biocomposites : Nanofillers organization in biopolymer matrices" ICT – Polymer Departement. Pragua (Czech Republic) 18 October, 2005.
- 4- Avérous L. (2005) « Materials based on Starch ». Universidade Sao Francisco, Itatiba (Brazil) 4 November, 2005
- 5-Avérous L. (2005) « Starch-based biodegradable materials ». Departamento de Engenharia de Alimentos, Universidade de Sao Paulo, Pirassununga (Brazil) 8 November, 2005
- 6-Avérous L. (2006) « Matériaux multiphasés à base d'amidon » CERMAV- Grenoble (France) 26 June 2006
- 7- Avérous L. (2007) « Materials based on renewable resources » Escola Politecnica, Universidade de Sao Paulo, Sao Paulo (Brazil) 24 May 2007
- 8- Avérous L. (2007) « Towards the Improvement of Green Plastics » Australian Institute for Bioengineering and Nanotechnology (AIBN) University of Queensland – Brisbane (Australia) 4 July 2007 (Invited Professor)
- 9-Avérous L. (2008) « Au carrefour du Bio et du nano : les nano-biocomposites » University of Lille. Villeneuve d'Ascq (France) 29 Feb 2008.

Oral Communications: 33 (17 invited)

Posters: 36

Other publications: 8

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