

Elena Vismara, 1978 Degree in Chemistry, University of Milano.

1979-1991 Researcher of Politecnico di Milano, Italy.

1992- Associate Professor of Politecnico di Milano SSD Chim/07 Fondamenti Chimici delle Tecnologie

Head of Applied Organic Chemistry Laboratory, Dipartimento "G. Natta".

Lab. Equipments: A- Organic synthesis, synthetic photochemistry, analytical and preparative electrochemistry. B- Microwave oven for organic synthesis. C-Spectrophotometer UV-Vis with solid integrating sphere. D- Spectrophotometer FT-IR. E- Analytical and semi-preparative HPLC apparatus.

#### Most important financed projects

-Research Contract 2000-2002 for LINIFICIO CANAPIFICIO NAZIONALE S.p.A. Fara Gera d'Adda (Bergamo), "Technology for obtaining anti-crease flax"; -Consultant project 2006 for Linificio "Traceability"; -Consultant project 2001-2002 for TECNOTESSILE Prato (Firenze), "Radical reactions for textile finishing"; -Research Contracts 2001-2002 for OPOCRIN S.p.A Corlo di Formigone (Modena), "Oxidative, Depolymerization of Heparin "; -COFIN textile 2000-2002 "High energy irradiations and radical functionalisations of textile"; -Firb 2001-2003 "Glicosaminoglicans Elastase and Selectin Antagonists as anti-inflammatory Drugs"; -International Firb 2004-2007 "Oligosaccharide Vectorised Nanostructures for targeting cytotoxic Drugs to Tumor Cells"; -Firb 2006-2009 "Technology and materials for italian textile" (MTIT) "Alfa- cellulose from alternative sources"; -Subcontractor 5Th Framework Program/quality of life and manag. of living resources, 2002-2004 "Heparanase Inhibitors in Antiangiogenetic and Antimetastatic Cancer Therapy"; -Umberto Veronesi Foundation 2010-2012 "Synthetic sulfated hexasaccharides mimics of maltohexaose of antimetastatic activities. Action mechanism and bioavailability"; - National Institute of Health (USA) 2010-2012 CA138535 "Novel Heparanase Inhibitors for Cancer Therapy"; - Bando Industria 2015, 2012-2014 - Project "Nuove Tecnologie per il Made in Italy" (D.M. 10 luglio 2008) submission number M101\_00007.

#### Some strategic research lines

- 1-Total synthesis of carbohydrate-based biological active molecules [1]. Applications: antitumour drugs.
- 2- New cellulose materials preparations [2, 3]. Alternative renewable alpha cellulose sources [4]. Applications: drug release, dyes and pollutant molecules filters, artificial cellulose fibres.
- 3- Heparin and derivatives. Applications: antithrombotic and anticoagulant drugs [5].
- 4- Heparin-cyclodextrin nanostructures Applications: in vivo drugs vectorisation. Oral presentation at Cyclodextrin Symposium Vienna Austria 2010.
- 5- Heparin-inorganic nanoparticles. Application: reduced toxicity. Oral presentation at ICONN 2010, Sydney Australia 2010.

1. E. Vismara et al Chemistry--A European Journal (2009), 15(32), 8005-8014.
2. E. Vismara et al Journal of Hazardous Materials (2009), 170(2-3), 798-808.
3. E. Vismara et al European Polymer Journal (2005), 41(8), 1787-1797.
4. E. Vismara et al Journal of Materials Chemistry (2009), 19(45), 8678-8686.
5. E. Vismara et al Thrombosis and Haemostasis (2010), 103(3), 613-622.

Collaborations with A-It. Universities and Companies. B-CNR Bologna. C-Non Profit Foundation "G. Ronzoni (Mi). D- Humanitas Rozzano (Mi), Ist. Ric. Cura a Car. Scient. (IRCCS). E- Zurich University (Svizzera). F- Hadassah University Medical Center, Jerusalem (Israel). G- University of Alabama at Birmingham (USA).

She is author of about 100 publications and patents.

#### Selected publications

1. "Sulfated hexasaccharides attenuate methastasis by inhibition of P-selectin and heparanase" . L. Borsig, I. Vlodavsky, R. Ishai-Michaeli, G. Torri, E. Vismara *Neoplasia*, 2011, 13, 445-452 DOI: 10.1593/neo.101734.
2. "Radical-based grafting of GMA on sutures of different nature" A. Alberti, P. Fuochi, M. Guerra, D. Macciantelli, G. Torri, A. Valerio and E. Vismara *Org. Biomol. Chem.*, 2011, Advance Article DOI: 10.1039/C0OB01196G, 2011, 9, 3199-3209.
3. "Low molecular weight heparin from Cu<sup>2+</sup> and Fe<sup>2+</sup> Fenton type depolymerisation processes." Vismara E, Pierini M, Mascellani G, Liverani L, Lima M, Guerrini M. *Thromb Haemost.* 2010 Mar 1;103(3):662-78.
4. "Electrostatic interactions between heparin and transition metal oxide nanoparticles." E. Vismara, A. Bava, L. Tinè, G. Torri, and C. Cosentino. O. C., ICONN 2010 Conference on Nanoscience and Nanotechnology, Sydney Australia. Book of Abstract Symposium2a.
5. "Alpha cellulose from industrial and agricultural renewable sources like short flax fibres, ears of corn and wheat-straw and its transformation into cellulose acetates." VISMARA, E.; GASTALDI, G.; VALERIO, A.; BERTINI, S.; COSENTINO, C.; EISLE, G. (2009). *JOURNAL OF MATERIALS CHEMISTRY* 19(45), 8678-8686.
6. "Surface functionalization of cotton cellulose with glycidyl methacrylate and its application for the adsorption of aromatic pollutants from wastewaters." VISMARA, E.; MELONE, L.; GASTALDI, G.; COSENTINO, C.; TORRI, G. (2009) *JOURNAL OF HAZARDOUS MATERIALS*, 170(2-3), 798-808.
7. "Electrochemical Characterization of 6-Iodomaltose, 6'-Iodomaltose and 6-Iodomaltotriose on a Silver Cathode and Their One-Pot Electrochemical Dimerization to New Mixed O/C Maltotetraose and Maltohexaose Mimics." ALBERTI, A.; MACCIANTELLI, D.; NAGGI, A.; URSO, E.; TORRI, G.; VISMARA, E. (2009). *CHEMISTRY-A EUROPEAN JOURNAL*, 15(32), 8005-8014.
8. "New nanostructured cellulose materials for the filtration of pollutants and for the absorption of dyes." E. Vismara, G. Gastaldi, L. Melone, C. Cosentino, G. Torri *Technical Proceedings of the 2008 (Boston, June 1-5, 2008) Nanotechnology Conference and Trade Show. Volume 2, Chapter 2: Environment, Health & Toxicology*, pag 110-113.
9. "Low molecular weight heparin-vectorized beta-cyclodextrin nanostructures " E. Vismara, D. Pizzolato, S. Bertini, G. Torri, A. Valerio *Technical Proceedings of the 2008 (Boston, June 1-5, 2008) Nanotechnology Conference and Trade Show. Volume 2, Chapter 6: Nano Medicine & Neurology*, pag 487-490.
10. "Structural modification induced in heparin by a Fenton-type depolymerization process." VISMARA E., PIERINI M., GUGLIERI S., LIVERANI L., MASCELLANI G., TORRI G. (2007). *SEMINARS IN THROMBOSIS AND HEMOSTASIS*. vol. 33, pp. 466-477

#### Selected patents

1. Mimetics of sulfated oligosaccharides useful in treatment of angiogenesis, metastasis, and inflammation. Vismara, Elena; Torri, Giangiacomo; Vlodavsky, Israel; Naggi, Annamaria. (Istituto Scientifico di Chimica e Biochimica "G Ronzoni, Italy; Politecnico Di Milano). *Eur. Pat. Appl.* (2010), 23pp.; Chemical Indexing Equivalent to 152:177158 (WO).
2. Derivatized polysaccharide material for the transdermal administration of drugs. Graziani, Giorgio; Montanelli, Alessandro; Melone, Lucio; Vismara, Elena; Torri, Giangiacomo. (Humanitas Mirasole S.p.A., Italy;

Politecnico di Milano; "Istituto Di Ricerche Chimiche e Biochimiche Giuliana Ronzoni"). PCT Int. Appl. (2009), 29pp. CODEN: PIXXD2 WO 2009013770 A1 2009012

3. Multistep process for the physical depolymerization of heparin and products obtained therefrom. De Ambrosi, Luigi; Gonella, Sergio; Bensi, Donata; Torri, Giangiacomo; Bisio, Antonella; Vismara, Elena. (Laboratori Derivati Organici S.P.A., Italy). Eur. Pat. Appl. (2005), 11 pp.
4. Depolymerization of glycosaminoglycans by UV radiation. De Ambrosi, Luigi; Vismara, Elena. (Laboratori Derivati Organici S.P.A., Italy). Eur. Pat. Appl. (2004), 8 pp. CODEN: EPXXDW EP 1475391 A1 20041110
5. Free-radical functionalized polysaccharides. Torri, Giangiacomo; Vismara, Elena; Alberti, Angelo; Bertini, Sabrina; Ciardelli, Gianluca; Gastaldi, Giuseppe; Nesti, Solitario. (Tecnotessile Societa Nazionale di Ricerca Tecnologica r.L., Italy; Istituto di Chimica E Biochimica "G. Ronzoni"). Eur. Pat. Appl. (2003), 20 pp. CODEN: EPXXDW EP 1347000 A1 20030924