



UNIVERSITÀ DEGLI STUDI
DI MILANO
University of Milan

Food Packaging Research at the University of Milan



Milan. City of knowledge

MILANO is the leading town in Italy for investments in technological research and innovation



It offers a unique **scientific environment** which comprises **9 Universities** and a large number of research and high educational institutions

University of Milan



Sede centrale: facciata lungo largo Richini



Sede centrale: cortile del Richini



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DI MILANO

The Department of Food, Environmental and Nutritional Sciences - *DeFENS*

5 Sections (or Divisions) belong to the Department:

<http://www.defens.unimi.it>

Chemical and Biomolecular Sciences

(Stefania.lametti@unimi.it)

Agro-Environmental Systems

(Paolo.Cortesi@unimi.it)

Food Microbiology and Bioprocesses

(Grazia.Fortina@unimi.it)

Human Nutrition

(Paolo.Slmonetti@unimi.it)

Food Technology

(Mara.Lucisano@unimi.it)

DeFENS

DEPARTMENT OF FOOD, ENVIRONMENTAL
AND NUTRITIONAL SCIENCES

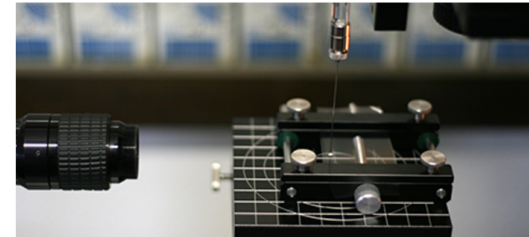
Department of

Department of Food, Environmental and Nutritional Sciences



Our mission is to implement education and research in order to provide a safe, nutritious, and affordable food supply that enhances human health. The Department of Food Environmental and Nutritional Sciences, (DeFENS) was founded in 2012 and it is part of the Agricultural Faculty of the University of Milan (Italy). It was established as a response to the increasing demand for ...

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[HOMEPAGE](#) [DEPARTMENT](#) [STAFF](#) [RESEARCH](#) [TEACHING](#) [INTERNATIONAL RELATIONS](#) [SERVICES](#)



NEWS

AACCI Student Research Leadership award



Davide Bigagnoli - our master student in Food Science and Technology - has received the "AACCI Student Research Leadership Program"

15TH EUROPEAN YOUNG CEREAL SCIENTISTS AND TECHNOLOGISTS WORKSHOP

The Department of Food, Environmental, and Nutritional Sciences (DeFENS), in collaboration with the AACCI European Section, Cereals&Europe, organizes the "15th European Young Cereal Scientists and Technologists Workshop".



PackLAB WON THE GREEN AWARD PRIZE

PackLAB, the food packaging laboratory of the University of Milan, has been awarded by one of the three prizes of the GreenAwards competition promoted by the weekly publication "SETTE" belonging to the newspaper "Corriere della Sera". The competition was specifically addressed to public and private research centers involved in research programs of excellence dealing with environmental sustainability.



RSS

[NEWS ARCHIVE](#)



SEMINARS AND CONFERENCES



First prize to our PhD student Ilke Uysal Unalan for the best poster in the "Polymer Materials from Renewable Sources and Functional Nanocomposites and Coatings"

On the occasion of the "8th ECNP International Conference on ...



FOCUS ON

Public competition for admission to the PhD Programme in Food Systems (XXXI Cycle)

To be admitted to the interview, candidates should have reached a project score of minimum 5 and CV score of a minimum 10.



WHERE WE ARE



Via Mangiagalli, 25 - 20133 Milano
02-503.19199 | 02-503.19191
defens@unimi.it

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www.packlab.unimi.it



The Food Packaging Laboratory (PackLAB) of University of Milan was established in 1985 at the Department of Food, Environmental and Nutritional Sciences – DeFENS (formerly DISTAM) as the first Italian academic center exclusively devoted to packaging research. At that time, the first course of Food Packaging and Distribution was offered in our Country, within the curriculum of Food Science and Technology in the Faculty of Agriculture of University of Milan. The very fast and worldwide growing importance of the food packaging sector pushed PackLAB to grow quickly as well. In these almost 25 years several collaborations have been established with other Universities and Research Centers in Italy and abroad, together fruitful industrial partnerships with in the food and polymeric materials sectors.

Our mission

We truly believe that is possible (or better, it is necessary) to observe, to understand, and to measure in a quantitative fashion whatever deals with food packaging. In few words, to apply scientific methods to food packaging-related aspects. Our mission is to apply basic principles to understand everyday phenomena in order to find breakthrough solutions to practical issues.



Research Topics

- › Extraction of renewable resources
- › Development of innovative food packaging materials
- › Mass transfer and shelf life
- › Food contact and safety

Recent News

- › PackLAB at Ipack-ima 2015
- › Three events on food packaging together for EXPO 201

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An Operative Unit exclusively devoted to food packaging (the Packlab) has been established in our University since 1985.

PackLAB is the only unit in the University of Milan engaged in research, teaching and testing in the Food Packaging field



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DI MILANO



Sara Limbo



Sara Limbo

Researcher

Sara Limbo is Researcher at the Department of Food Science and Microbiology of University of Milan. She achieved a PhD degree in 2004, with a dissertation on the performance and effectiveness of oxygen scavengers in critical food applications. She participated in several Italian research projects and in the European Fair Project "Actipak" closed in 2001 and is now involved in the European Fair Project "Nafispak" on natural antimicrobials for innovative and safe packaging. Her primary interest deals with food packaging technologies and the quality of food packaged products. She is author and co-author of about 40 works among scientific publications and communications to conferences.

Teaching:

Packaging Technology. Agricultural Faculty, University of Milan
Fundamentals of Packaging Technology. Agricultural Faculty, University of Milan
Research activity:

Shelf life of packaged foods;
Light effects on food and packaging;
Active packaging



PackLAB

UNIMI Food Packaging Laboratory

Stefano Farris



Stefano Farris

Assistant Professor

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Telephone: +39 0250316805
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Email: stefano.farris@unimi.it
website: www.stefanofarris.eu

Education

Ph.D. – Food and Microbial Biotechnology, University of Milan (2007)
M.Sc. – Food Science and Technology, University of Sassari (2004)
B.Sc. – Agricultural Science and Technology, University of Sassari (2001)

PACKLAB LINKS and CONNECTIONS

We have some collaborations with other Universities and Research Centres around the world:

***Department of Food Science
Rutgers University New Brunswick, New Jersey***



***Division of Life Sciences
Kyungnam University Masan South Korea***



***Tianjin University of Science and Technology Hexi district, Tianjin, China
Department of Food Science and Technology, Kasetsart University***



Agropolymers Engineering and Emerging Technologies Montpellier University France

***INRA UMR Science de l'aliment et de l'emballage (INRA-CNAM-ENSIA)
MASSY CEDEX France***

Bordeaux University FR - Biopolymers & bio-based materials LCPO, UMR CNRS 5629 -IPB/ENSCBP

Centro Politécnico Superior de Ingenieros Universidad de Zaragoza Spain

Facultade de Farmacia Universidade de Santiago de Compostela Spain

Fraunhofer-Institut für Verfahrenstechnik und Verpackung IVV in Freising.



PACKLAB LINKS and CONNECTIONS

We have/had many partnerships with food and packaging companies as well as with Industrial Associations:

*Cryovac Sealed air
Goglio spa
Sirap Gema Group
AMB packaging
Metalvuoto
SIG COMBIBLOC srl
CSI spa IMQ Group
Testing and Certification*

*.....
Ferrero
Barilla
Rovagnati
Lavazza
Gran Milano
Naba carni
Specchiasol
Hilly caffè
.....*



*GIFLEX The group of
Italian Flexible Materials
Producers*

*SSCC The experimental
Centre for paper and board*

*IPACKIMA International
Exhibition for Processing,
Packaging & Material
handling*

PVC Information Centre

The Italian Scientific Group of Food Packaging

In 2004 we
founded the
*Italian
Scientific
Group of Food
Packaging
(GSICA)*

[ABOUT US](#)[ACTIVITIES](#)[OUR MEMBERS](#)[GSICA MEETS](#)[CONTACT](#)

ABOUT US

THE GSICA

GSICA is the acronym for the Italian Scientific Group of Food Packaging, a cultural association which collects researchers in the Food Packaging field, motivated by the wish to share their own experience

HISTORY

The GSICA was born in 1999 on initiative of some researchers of the department of Food Science and Technologies (diSTAM), University of Milan. The group, informally, dedicates special attention to the professional updating and to a fruitful relation with companies which produce or use packaging for foods.

The conferences organized independently or in conjunction with important events in the field, gained a large success, as to testify the strong need by the food packaging world to strengthen contacts.

In the spring 2004 GSICA becomes a formal association

This step was compulsory for a Group which gave proof of great skill. The Association rises from the intention to widen the range of its initiatives and to optimize resources, while the aims and the essence of the Group have always remained the same that justified its beginning: to create a useful and positive aggregation among those people committed to face scientific problems in the field of food packaging, to contribute to the progress of knowledge in this applied research area, to encourage the growth and diffusion of a scientific culture and, last but not least, to skilfully represent the Italian research in international contexts.

Over the last few years GSICA gained experience in planning and organising multidisciplinary event, broadened its number of affiliates and is now acting as one of the main association with regard to food science. With the aim of improving the quality of the services provided GSICA, as from June 2009, has registered its statute and obtained an IVA code.

THE ORGANIZATION

The association is non-profit and operates for the only pursuit of cultural purposes, always bearing in mind the concept of "sustainable development".

<http://www.gsica.net/>

FOOD PACKAGING RESEARCH at PACKLAB



From a general point of view we always try to develop research programs quite close to the needs of the industrial sector and related to the major issues and more innovative topics of the packaging world, starting from a scientific fundamental knowledge:

APPLIED RESEARCH

FOOD PACKAGING RESEARCH at PACKLAB



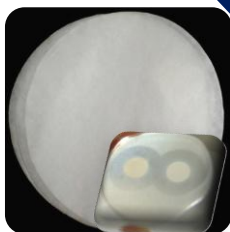
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APPLIED RESEARCH

FOOD PACKAGING RESEARCH at PACKLAB

Antimicrobial proteins (LZ and LF) controlled release from paper sheets

The figure shows the activity of paper sheets against food spoilage microorganisms.



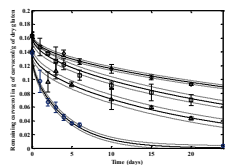
Incorporation and diffusion of natural volatile antimicrobials from bio-coating



Essential oil of carvacrol



Cyclodextrin



Studies of release of carvacrol from biocoating at different RH

Low-moisture and dried foods
Modelling of moisture diffusion across the packaging material

Meat & Processed Meat
Optimization of active packaging solutions

Beverages
Effects of light exposure and protection efficacy of packaging

SHELF LIFE TESTING & MODELLING

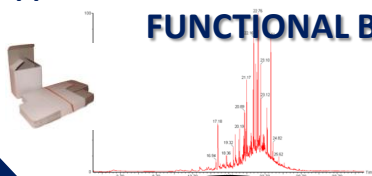
ACTIVE PACKAGING SYSTEMS

FOOD CONTACT COMPLIANCE

INNOVATIVE BIOBASED MATERIALS

NIAS (non intentionally added substances)

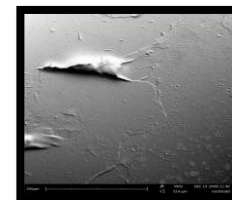
Transference of contaminants from cellulosic packaging and innovative approach for food contact material safety



FUNCTIONAL BARRIERS

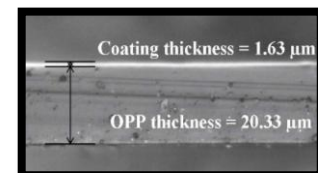
Sealable bio-coatings

SEM image shows a polypropylene coated films after rupture of sealed strips



Barrier bio-coatings

A very thin bio-coating can improve the oxygen barrier property of a plastic film.



Nano-Cellulose applications

Cellulose properties including hydrophilicity, biocompatibility, stereoregularity, biodegradability, chemical stability, multi-chirality, reactive hydroxyl groups and the ability to form superstructures.

