

Advanced Course

RECYCLABLE, BIODEGRADABLE, ACTIVE AND INTELLIGENT FOOD PACKAGING

Zaragoza (Spain), 14-18 November 2022

Programme

- Opening (1 hour)
1. Introduction: roles, significance and types of packaging in food supply chain (2 hours) (C. Nerín)
 - 1.1. Security
 - 1.2. Preservation
 - 1.3. Information
 - 1.4. Convenience and consumer issues
 2. Circular Economy and packaging (1 hour) (C. Peñalva)
 - 2.1. Legal framework and EU action plan
 - 2.2. Implementation measures and challenges
 3. Recycling in packaging (6 hours)
 - 3.1. Recyclability of plastics: mechanical, chemical and thermal recycling processes (2h) (F. Poças, C. Nerín)
 - 3.2. Recyclability of papers and cardboards (1h) (C. Nerín)
 - 3.3. Technological issues and functional performance: design for recycling (2h) (L. Incarnato)
 - 3.4. Regulatory aspects (1h) (F. Poças)
 4. Biodegradable and compostable packaging (4 hours)
 - 4.1. Source, processing, properties and uses (1h) (L. Licciardello)
 - 4.2. Biodegradation and composting processes (1h) (C. Peñalba)
 - 4.3. Paper/plastic packaging: laminated films, poly-coated paper and cardboard (1h) (F. Licciardello)
 - 4.4. Advantages and disadvantages of bio-based materials in packaging (1h) (C. Peñalba)
 5. Active packaging (5 hours)
 - 5.1. Absorbers and scavengers; emitters and releasers (1h) (F. Silva)
 - 5.2. Antioxidant packaging (1h) (F. Silva)
 - 5.3. Antimicrobial packaging (1h) (F. Silva)
 - 5.4. Incorporation of active ingredients in the packaging material (1h) (F. Poças)
 - 5.5. Regulatory aspects (1h) (F. Poças)
 6. Intelligent packaging (2 hours)
 - 6.1. Sensors and indicators: oxygen and other gases, temperature, microorganisms, etc. (1h) (R. Becerril)
 - 6.2. Regulatory aspects (1h) (C. Nerín)
 7. Nanotechnology in food packaging (1 hour) (F. Licciardello)
 - 7.1. Principles and applications
 - 7.2. Regulatory issues
 8. Tools for assessment of the environmental sustainability of packaging (2 hours)
 - 8.1. Life cycle analysis (LCA) and carbon footprint (1h) (A. Navajas)
 - 8.2. Examples and applications (A. Navajas, F. Poças)
 9. Group work (7 hours)

Session 1: Problem definition (1h) (C. Nerín, F. Poças, F. Licciardello)

Session 2: data collection (1h) (C. Peñalva, F. Silva, F. Poças)

Session 3: formulation of solutions (1h) (A. Navajas, C. Nerín, F. Poças)

Session 4: results and conclusions (1h) (F. Silva, C. Peñalva)

Presentation of results and discussion (2h) (C. Nerín, C. Peñalva, F. Poças, F. Silva)

Conclusions and lessons learned (1h) (C. Nerín)
 10. Technical visit (Aitiip) (2 hours)