RESEARCH LINE 9A	
COMPANY	**Ecoembes**
PhD THESIS SUPERVISOR (UPM)	Prof. Dr. María Dolores Robustillo Fuentes *Industrial Engineering School* *Department of Chemical and Environmental Engineering*
PhD THESIS CO-SUPERVISOR (COMPANY)	Dr. Jorge García Barrasa *Ecoembes*
DESCRIPTION OF THE PhD THESIS PROJECT	Complex packaging is made of various materials that are difficult to separate and difficult to recycle mechanically. Thus, they are currently disposed of in landfills without any treatment leading to environmental problems. ECOEMBES manages household packaging wastes and wants to provide an added value to its customers and satisfy European waste legislation. It is of special relevance to know the behavior of non-mechanical recycling packaging within a chemical recycling process in order to screen which products are suitable for chemical recycling. The objective of this PhD thesis is to analyze the technical and economic viability of some of the current chemical recycling strategies to convert packaging wastes into added value products through computer simulations. The influence of the type of packaging on the efficiency of the process and on the quality of the new products will be also evaluated. This PhD thesis will form part of the SDGine MSCA COFUND of UPM, in which Industrial Doctorates are going to develop technologies and tools to accelerate SDG compliance through Horizon Europe Mission Boards related to climate change and societal transformations in urban contexts. In this case, it is pretended to take action for the sustainable Development Goals (SDGs) 11 (Sustainable cities and communities) and 13 (Climate action).
TRAINING ACTIVITIES	The cross curricular training activities will be determined by the Doctoral Program PD 05F7 - Environmental, Chemical and Materials Engineering (Doctorado en Ingeniería Ambiental, Química y de los Materiales (R.D.99/2011)) of the Polytechnic University of Madrid (http://www.etsii.upm.es/estudios/doctorados/ingenieria_ambiental.es.htm), which is completely aligned with the PhD project topic. The general training activities of a Doctoral Program comprise the analysis of scientific documentation, learning of research methodologies, development skills for scientific communication, participation in congress, conferences, seminars and in research projects, as well as the publication of scientific papers in high impact journals or other activities related to the development of the doctoral thesis. The proposed thesis has a high multidisciplinary character involving different areas such as chemical recycling of polymeric materials, thermodynamics, and computational simulation. The specific training activities will be related to the design of products and processes for the chemical industry. The PhD candidate will be trained to apply knowledge of mathematics, physics, and chemistry with critical reasoning to establish economically viable solutions to technical problems. Special relevance will be given to the use of commercial simulators, process design, phase equilibria involving polymers and polymers characterization.
SECONDMENT(S)	Research stages in other laboratories and short visits in national and international collaborating centres are expected.
REQUIREMENTS FOR CANDIDATES	**Degree**: MSc in Chemistry, Polymer Science, Material Science, Chemical Engineering, Sustainable Chemistry, Industrial Engineering, or related Subjects.

	Skills: good command of written and spoken English; good attitude to teamwork; processes modelling, data analysis and processing. **Background** in phase equilibria, polymer science and process simulation.