

I. INTRODUCTION	1
1. Micro- and nanoencapsulation	1
1.1. Most commonly used nanoencapsulation technologies	2
1.2. Micro- and nanoencapsulation applications	8
2. Electro-hydrodynamic process for encapsulation applications	13
2.1. Generalities about the electro-hydrodynamic process	13
2.2. Advantages of electro-hydrodynamic processing for encapsulation	16
2.3. Use of electro-hydrodynamic process for encapsulation in the food area.....	18
References.....	25
II. OBJECTIVES.....	33
1. General and specific objectives	33
III. RESULTS AND DISCUSSION	35
CHAPTER I. Development of zein-based heat-management structures for smart food packaging	35
CHAPTER II. Biodegradable polyester-based heat management materials of interest in refrigeration and smart packaging coatings	71
CHAPTER III. Use of electro-hydrodynamic processing to develop nanostructured materials for the preservation of the cold chain.....	107

CHAPTER IV. Surfactant-aided electro spraying of low molecular weight carbohydrate polymers from aqueous solutions	141
CHAPTER V. Development and optimization of novel encapsulation structures of interest in functional foods through electro spraying	167
CHAPTER VI. Encapsulation of folic acid in food hydrocolloids through nanospray drying and electro spraying for nutraceutical applications.	199
CHAPTER VII. Morphology and stability of edible lycopene-containing micro- and nanocapsules produced through electro spraying and nanospray drying	237
IV. GENERAL DISCUSSION	269
V. CONCLUSIONS	276
VI. ANNEXES	278
Annex 1. Heat transfer study of nano-encapsulated PCM plates	278
Annex 2. List of publications.....	282