

INDICE

INTRODUCCIÓN	17
1. MEDIOAMBIENTE.....	20
1.1. GASES DE GUERRA Y EXPLOSIVOS.....	20
1.1.1. <i>Detección de gases de guerra.....</i>	21
1.1.2. <i>Detección de explosivos: 2,4,6-Tiritrotolueno (TNT).....</i>	23
2. ALIMENTACIÓN	24
2.1. <i>Medida de la calidad de alimentos: fruta.....</i>	25
3. TÉCNICAS DE MEDIDA	27
3.1. <i>Lenguas electrónicas</i>	27
3.2. <i>Narices electrónicas.....</i>	29
REFERENCIAS	31
OBJETIVOS.....	39
CHAPTER 1: TNT DETECTION USING A VOLTAMMETRIC ELECTRONIC TONGUE BASED ON NEURAL NETWORKS.....	43
ABSTRACT.....	45
1. INTRODUCTION.....	45
2. MATERIALS AND METHODS	46
2.1. <i>Electronic System.....</i>	46
2.2. <i>Electrodes</i>	47
2.3. <i>Implementation of MLFN in a microcontroller</i>	47
2.4. <i>Experimental.....</i>	48
2.5. <i>Data Preprocessing.....</i>	49
2.6. <i>Neural Networks.....</i>	52
3. RESULTS AND DISCUSSIONS	54
3.1. <i>Classification.....</i>	54
3.2. <i>Fitting</i>	57
4. CONCLUSION	59
ACKNOWLEDGEMENTS	59
REFERENCES.....	59
CHAPTER 2: AN ELECTRONIC NOSE FOR THE DETECTION OF SARIN, SOMAN AND TABUN MIMICS AND INTERFERING AGENTS	63
ABSTRACT.....	65
1. INTRODUCTION.....	65
2. THEORY	67
2.1. <i>Principle of operation</i>	67
2.1.1. <i>Chemical Principle.....</i>	67
2.1.2. <i>Transducer Principle.....</i>	68
3. MATERIALS AND METHODS	69

3.1. <i>Chemicals</i>	69
3.2. <i>Experimental</i>	69
3.3. <i>Equipment</i>	71
3.3.1. Sensors array.....	72
3.3.2. Sample handling system.....	73
3.3.3. Data acquisition system	73
3.3.4. Data acquisition system control.....	74
4. RESULTS AND DISCUSSION.....	74
4.1. <i>PCA Classification</i>	75
4.2. <i>PLS Quantification</i>	76
5. CONCLUSION	77
ACKNOWLEDGEMENTS	78
REFERENCES.....	78
CHAPTER 3: ODOUR SAMPLING SYSTEM WITH MODIFIABLE PARAMETERS APPLIED TO FRUIT CLASSIFICATION	81
ABSTRACT.....	83
1. INTRODUCTION.....	83
2. ELECTRONIC NOSE DESCRIPTION.....	86
2.1. <i>Introduction</i>	86
2.2. <i>Electronic System</i>	88
2.3. <i>Software</i>	92
3. MATERIALS AND METHODS	93
4. RESULTS AND DISCUSSIONS	94
5. CONCLUSION	97
ACKNOWLEDGEMENTS	98
REFERENCES.....	98
DISCUSIÓN GENERAL DE RESULTADOS.....	99
CONCLUSIONES	105
PRODUCCIÓN CIENTÍFICA	109
PUBLICACIONES SCI.....	109
CONGRESOS	110