

# **Abstract**

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## **Implementing a portable Electronic Tongue for Ascorbic Acid Determination**

Over the last decade, several experiments were done to study the human senses and how to simulate them electronically in order to build a complete electronic system without any interface of human. Such systems can be used in critical applications in industry to help people disabled people to restore their normal life. Examples of these systems are the Electronic Nose and Electronic Tongue (ET) which is the topic of studied in this thesis. (ET) is very important in food market, which is used to detect spoiled good food beverages for the purpose of quality management. In this study an (ET) was designed to measure the level of Ascorbic Acid (AA) in orange juice in order to give an indication for the quality of the juice. Experimental and analytical works are applied in order to give accurate decision to be used during the quality assessment process. Experimental data based on several samples of commercial and fresh orange juice are tested under different storage temperatures for their (AA) level on a daily basis to observe the degradation of (AA) during days, the result of measurements were processed using analytical and classifying methods in order to extract the features of each type and determine the quality of the juice. The advantage of the proposed system over the commercial system is the mobility and portability of the whole system it consists only from a hand-held measuring device connected to a laptop. It eliminates the need for large analytical equipment. The proposed system offers an on-site analysis for the sample without the need for handling to a specific laboratory. In addition it also offers a low cost in comparable with the other commercial systems