

Euroensors paper number: T2C-O2

FLEXIBLE TAG MICROLAB DEVELOPMENT: GAS SENSORS
INTEGRATION IN RFID FLEXIBLE TAGS FOR FOOD LOGISTIC

E. Abad*¹, S. Zampolli², S. Marco³, A. Scorzoni⁴, B. Mazzolai⁵,
A. Juarros¹, D. Gómez¹, I. Elmi², G.C. Cardinali², J.M.Gómez³, F. Palacio³, M. Cicioni⁴,
A. Mondini⁵, Th. Becker⁶ and I Sayhan⁶

¹ Micro and Nanotechnology Department, Fundación Tekniker, Eibar, Spain

²CNR-IMM Sezione di Bologna, Italy

³ Universitat de Barcelona, Spain

⁴ DIEI, University Perugia, Italy

⁵ SSSA CRIM lab, Pisa, Italy

⁶ EADS Deutschland GmbH, Corporate Research Centre, München, Germany

*Corresponding author: eabad@tekniker.es, phone: 34 943 20 67 44, fax: 34 943 20 27 57

ABSTRACT

The enabling technologies for the development of a flexible tag microlab for food monitoring during the logistic chain will be presented. The realisation of the system includes physical and chemical sensors integration with Radio Frequency IDentification (RFID) communication capabilities. The first ISO 15693 compliant semi-active tag prototype, including low power control electronics, RFID antenna, commercial sensors, memory and a thin film battery, is shown together with the development of novel ultra low power hotplates required for this application and the process, based on the use of Anisotropic Conductive Adhesive (ACA) flip chip technology, for gas sensors integration onto flexible substrates.

KEYWORDS Flexible substrate technologies, gas sensors hotplates, RFID communication, ACA flip chip, ISO15693