

Accepted Manuscript

Title: Asymmetric enhanced surface interdigitated electrode capacitor with two out-of-plane electrodes

Authors: Almudena Rivadeneyra, José F. Salmerón, Manuel Agudo-Acemel, Luis Fermín Capitan-Vallvey, Juan A. López-Villanueva, Alberto J. Palma



PII: S0925-4005(17)31356-4
DOI: <http://dx.doi.org/doi:10.1016/j.snb.2017.07.141>
Reference: SNB 22800

To appear in: *Sensors and Actuators B*

Received date: 4-5-2017
Revised date: 20-6-2017
Accepted date: 19-7-2017

Please cite this article as: Almudena Rivadeneyra, José F. Salmerón, Manuel Agudo-Acemel, Luis Fermín Capitan-Vallvey, Juan A. López-Villanueva, Alberto J. Palma, Asymmetric enhanced surface interdigitated electrode capacitor with two out-of-plane electrodes, *Sensors and Actuators B: Chemical* <http://dx.doi.org/10.1016/j.snb.2017.07.141>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

ASYMMETRIC ENHANCED SURFACE INTERDIGITATED ELECTRODE CAPACITOR WITH TWO OUT-OF-PLANE ELECTRODES

Almudena Rivadeneyra¹, José F. Salmerón¹, Manuel Agudo-Acemel², Luis Fermín Capitan-Vallvey², Juan A. López-Villanueva³ and Alberto J. Palma^{3,*}

¹ Institute for Nanoelectronics, Technische Universität München, DE-80333, Munich, Germany

²ECsens, Departamento de Química Analítica, Facultad de Ciencias Universidad de Granada, E-18071, Granada, Spain

³ECsens, Departamento de Electrónica y Tecnología de Computadores, ETSIIT Universidad de Granada, E-18071, Granada, Spain

(e-mail: arivadeneyratorres@nano.ei.tum.de; jfsalmeron@ nano.ei.tum.de; manuelagudo@ugr.es; jalopez@ugr.es; lcapitan@ugr.es; ajpalma@ugr.es)

*Corresponding author: ajpalma@ugr.es Tel.: +34958242302 Fax: +34958242000

Highlights

- *New modelled and fabricated structure for capacitive sensors*
- *High increase in the bulk capacitance and sensitivity*
- *Feasibility of manufacturing by printing techniques on flexible substrates*

Abstract— This work presents a study of high-performance capacitive sensors based on a novel design of interdigitated electrode structure. In the proposed layout, electrodes are placed out of plane and the bottom electrode is a mixed interdigitated-planar plate electrode. Thanks to this layout, the sensor sensitivity is significantly enhanced. This structure has been characterized as humidity sensor manufactured by printing techniques on a flexible substrate. In particular, the sensitive layer is made of cellulose acetate butyrate deposited by screen printing, using silver ink to define the interdigitated electrodes. The capacitance is in the range of hundreds of pF with an area of 95.5 mm² at ambient conditions. The response of this sensor shows a sensitivity substantially dependent on the frequency but this sensitivity is considered to be enough to use this device as capacitive sensor in the whole range of frequency studied, for example 5 pF/%RH at 1 MHz. Further characterization was carried out to study the reliability of the manufacturing process and to measure the effect of temperature in the

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات