

Accepted Manuscript

Title: Dry Carbon/Salt Adhesive electrodes for recording Electrodermal Activity

Authors: Hugo F. Posada-Quintero, Ryan Rood, Yeonsik Noh, Ken Burnham, John Pennace, Ki H. Chon



PII: S0924-4247(16)30435-6
DOI: <http://dx.doi.org/doi:10.1016/j.sna.2017.02.023>
Reference: SNA 10006

To appear in: *Sensors and Actuators A*

Received date: 8-9-2016
Revised date: 15-2-2017
Accepted date: 18-2-2017

Please cite this article as: Hugo F.Posada-Quintero, Ryan Rood, Yeonsik Noh, Ken Burnham, John Pennace, Ki H.Chon, Dry Carbon/Salt Adhesive electrodes for recording Electrodermal Activity, Sensors and Actuators: A Physical <http://dx.doi.org/10.1016/j.sna.2017.02.023>

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.

Dry Carbon/Salt Adhesive electrodes for recording Electrodermal Activity

Hugo F. Posada-Quintero^a, Ryan Rood^a, Yeonsik Noh^a, Ken Burnham^b, John Pennace^b, and Ki H. Chon^a

^aUniversity of Connecticut, Storrs, CT 06269 USA

^bFLEXcon, Spencer, MA 01562 USA

Corresponding autor

E-mail: kchon@engr.uconn.edu

Dr. K. H. Chon

University of Connecticut, Storrs, CT 06269 USA

Abstract

In this work, dry carbon/salt adhesive (CSA) electrodes are found to be suitable for collecting electrodermal activity (EDA) signals. Silver/silver chloride (Ag/AgCl) electrodes have been considered as a reliable media to obtain EDA signals. However, mainly the cost and the need for a hydrogel layer make it difficult to disseminate the practice of using EDA signals in practical applications. A mixture of carbon salt and adhesive has shown to be suitable for collecting bioelectric signals (FLEXcon's Patent #8,673,184). With the objective of testing how these electrodes compare for collecting EDA signals, AC and DC source devices were employed. Sixteen subjects underwent electric shocks and tonic emotional and cognitive stress. No significant differences were found in amplitude, onset-to-peak time and onset time between CSA and Ag/AgCl electrodes. Frequency-domain index, EDASympn, was not found to be different between the two electrode types. The time-varying spectral index was different between Ag/AgCl and EDA electrodes for DC devices, not for the AC devices. Ag/AgCl electrodes often polarized impeding the collection of EDA signals, suggesting that CSA electrodes provide better fidelity EDA measures. We conclude that CSA electrodes are a suitable surrogate of Ag/AgCl electrodes for collecting EDA signals.

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