

DECLARATION OF GERARD P. GRENIER

I, Gerard P. Grenier, am over twenty-one (21) years of age. I have never been convicted of a felony, and I am fully competent to make this declaration. I declare the following to be true to the best of my knowledge, information and belief:

1. I am Senior Director of Publishing Technologies of the Institute of Electrical and Electronics Engineers, Inc. (“IEEE”).
2. IEEE is a neutral third party in this dispute.
3. Neither I nor IEEE itself is being compensated for this declaration.
4. Among my responsibilities as Senior Director of Publishing Technologies, I act as a custodian of certain records for IEEE.
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7. It is the regular practice of IEEE to publish articles and other writings including article abstracts and make them available to the public through IEEE Xplore. IEEE maintains copies of publications in the ordinary course of its regularly conducted activities.
8. The article below has been attached as Exhibits A to this declaration:

A.	R.G. Haahr, et al. “A wearable “electronic patch” for wireless continuous monitoring of chronically diseased patients” 5 th International Summer School and Symposium on Medical Devices and Biosensors, 2008, June 1 – 3, 2008.
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9. I obtained a copy of Exhibit A through IEEE Xplore, where it is maintained in the ordinary course of IEEE’s business. Exhibit A is a true and correct copy of the Exhibit as it existed on or about October 25, 2016.
10. The article abstracts from IEEE Xplore shows the date of publication. IEEE Xplore populates this information using the metadata associated with the publication

11. R.G. Haahr, et al. "A wearable "electronic patch" for wireless continuous monitoring of chronically diseased patients" was published in the 5th International Summer School and Symposium on Medical Devices and Biosensors, 2008. The 5th International Summer School and Symposium on Medical Devices and Biosensors, 2008 was held from June 1 – 3, 2008. Attendees of the conference were provided copies of the publication no later than the last day of the conference. The article is currently available for public download from the IEEE digital library, IEEE Xplore.

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I declare under penalty of perjury that the foregoing statements are true and correct.

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Abstract:

We present a wearable health system (WHS) for non-invasive and wireless monitoring of physiological signals. The system is made as an electronic patch where sensors, low power electronics, and radio communication are integrated in an adhesive material of hydrocolloid polymer making it a sticking patch. The patch is made with a reusable part and a disposable part which contains the adhesive material and the battery. This part is changed once every week. The patch has a size of 88 mm by 60 mm and a thickness of 5 mm. It is made for attachment on truncus or the greater muscle groups. The patch is demonstrated in two applications: Monitoring of electromyography (EMG) and arterial oxygen saturation by pulse oximetry (SpO₂). The pulse oximetry sensor is made of a concentric backside Silicon photodiode with a hole in the middle for the two light sources. This makes it suitable for reflectance pulse oximetry. For the EMG application three standard dry silver electrodes are used separated by 10 mm.

Published in: Medical Devices and Biosensors, 2008. ISSS-MDBS 2008. 5th International Summer School and Symposium on

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I. Introduction

During the last decade there have been an increasing interest in new technology and innovative systems for the health care system. Significant factors such as limitations in the health care system's resources, the aging population, and chronic conditions are motivating research.

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Biomedical monitoring, Patient monitoring, Electromyography, Wireless sensor networks, Sensor systems, Wearable sensors, Low power electronics, Radio communication, Polymers, Batteries

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pulse oximetry, wearable electronic patch, wireless continuous monitoring, chronically diseased patients, wearable health system, noninvasive monitoring, physiological signals, adhesive material, hydrocolloid polymer, electromyography, arterial oxygen saturation

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