# COMMUNICATION SYSTEM WITH REMOTE ACTIVATION

## CROSS-REFERENCE TO RELATED APPLICATIONS

**[001]** This application is a continuation-in-part of application serial no. 13/180,516 filed on July 11, 2011 and entitled "Communication System with Remote Activation", published on January 12, 2012 as U.S. Publication No. 2012/0007734A1, which application is a continuation-in-part of U.S. Patent Application No. 12/564,017, filed on Sept 21, 2009 and entitled "Communication System with Partial Power Source", published on April 1, 2010 as U.S. Publication No. 2010-0081894A1, which is a continuation-in-part application of U.S. Patent Application No. 11/912,475 filed June 23, 2008 and entitled "Pharma-Informatics System", published on November 20, 2008 as U.S. Publication No. 2008-0284599A1 which application is a 371 application of PCT Application No. PCT/US06/16370 filed April 28, 2006 and entitled "Pharma-Informatics System"; published on November 2, 2006 as WO Publication No. WO 2006/116718 which application pursuant to 35 U.S.C. § 119 (e), claims priority to the filing dates of: United States Provisional Patent Application Serial No. 60/676,145 filed April 28, 2005 and entitled "Pharma-Informatics System"; United States Provisional Patent Application Serial No. 60/694,078, filed June 24, 2005, and entitled "Pharma-Informatics System"; United States Provisional Patent Application Serial No. 60/713,680 filed September 1, 2005 and entitled "Medical Diagnostic And Treatment Platform Using Near-Field Wireless Communication Of Information Within A Patient's Body"; and United States Provisional Patent Application Serial No. 60/790,335 filed April 7, 2006 and entitled "Pharma-Informatics System"; the disclosures of which are herein incorporated by reference.

**[002]** This application is related to the following US Applications filed concurrently herewith, the disclosures of which are incorporated herein by reference: US Application Serial No. 13/180,498 COMMUNICATION SYSTEM WITH MULTIPLE SOURCES OF POWER, published on January 5, 2012 as U.S. Publication No. 2012/0004520A1; US Application Serial No. 13/180,539

COMMUNICATION SYSTEM USING AN IMPLANTABLE DEVICE, published on January 5, 2012 as U.S. Publication No. 2012/0004527A1; US Application Serial No. 13/180,525 COMMUNICATION SYSTEM WITH ENHANCED PARTIAL POWER AND METHOD OF MANUFACTURING SAME, published on May 10, 2012 as U.S. Publication No. 2012/0116188A1; US Application Serial No. 13/180,538 POLYPHARMACY CO-PACKAGED MEDICATION DOSING UNIT INCLUDING

COMMUNICATION SYSTEM THEREFOR, published on February 2, 2012 as U.S. Publication No. 2012/0024889A1; and US Application Serial No. 13/180,507 COMMUNICATION SYSTEM INCORPORATED IN AN INGESTIBLEPRODUCT, published on March 15, 2012 as U.S. Publication No. 2012/0062379A1.

## FIELD

**[003]** The present invention is related to communication systems for detection of an event. More specifically, the present disclosure includes a system that includes a device with various power sources and communication schemes.

## INTRODUCTION

**[004]** Ingestible devices that include electronic circuitry have been proposed for use in a variety of different medical applications, including both diagnostic and therapeutic applications. These devices typically require an internal power supply for operation. Examples of such ingestible devices are ingestible electronic capsules which collect data as they pass through the body, and transmit the data to an external receiver system. An example of this type of electronic capsule is an in-vivo video camera. The swallowable capsule includes a camera system and an optical system for imaging an area of interest onto the camera system. The transmitter transmits the video output of the camera system and the reception system receives the transmitted video output. Other examples include an ingestible imaging device, which has an internal and self-contained power source, which obtains images from within body lumens or cavities. The electronic circuit components of the device are enclosed by an inert indigestible housing (e.g. glass housing) that passes through the body internally. Other examples include an ingestible data recorder capsule medical device. The electronic circuits of the disclosed device (e.g. sensor, recorder, battery etc.) are housed in a capsule made of inert materials.

**[005]** In other examples, fragile radio frequency identification (RFID) tags are used in drug ingestion monitoring applications. In order for the RFID tags to be operational, each application/tag requires an internal power supply. The RFID tags

one or more components on the surface of the support may be laid out in any convenient configuration. Where two or more components are present on the surface of the solid support, interconnects may be provided. All of the components and the support of the ingestible circuitry are ingestible, and in certain instances digestible or partially digestible.

**[008a]** According to an aspect of the invention, a device for communication, the device comprising: a communication unit comprising: a support structure; a partial power source comprising: a first material deposited onto the support structure; and a second material deposited onto the support structure and electrically isolated from the first material, wherein the first material and the second material are selected to have a voltage potential difference when in contact with a conducting fluid to provide power to activate the device; a control module associated with the support structure and electrically connected to the first material and the second material for controlling the conductance between the first material and the second material such that a change in conductance between the first material and the second material alters the device's current signature and thereby encodes information in the current signature; and a unit in communication with the control module and associated with the support structure to at least either receive a signal from an external source or send a signal to the external source; a sealed housing defining a cavity, wherein the communication unit is positioned within the cavity; and a release material within the cavity, wherein the unit generates a release command to cause the release material to expand and open the sealed housing.

## BRIEF DESCRIPTION OF THE FIGURES

**[009]** Fig. 1 shows a pharmaceutical product with an event indicator system according to the teaching of the present invention, wherein the product and the event indicator system combination are within the body.

**[010]** Fig. 2A shows the pharmaceutical product of Fig. 1 with the event indicator system on the exterior of the pharmaceutical product.

**[011]** Fig. 2B shows the pharmaceutical product of Fig. 1 with the event indicator system positioned inside the pharmaceutical product.

**[012]** Fig. 2C shows a capsule with the event indicator system positioned inside in accordance with one aspect of the present invention.

**[013]** Fig. 2D shows a capsule with the event indicator system positioned inside in accordance with one aspect of the present invention.

**[014]** Fig. 2E shows a capsule with the event indicator system positioned inside in accordance with one aspect of the present invention.

**[015]** Fig. 2F is an exploded view of the event indicator system.

**[016]** Fig. 3 is a block diagram representation of one aspect of the event indicator system with dissimilar metals positioned on opposite ends.

**[017]** Fig. 4 is a block diagram representation of another aspect of the event indicator system with dissimilar metals positioned on the same end and separated by a non-conducting material.

**[018]** Fig. 5 shows ionic transfer or the current path through a conducting fluid when the event indicator system of Fig. 3 is in contact with conducting liquid and in an active state.

**[019]** Fig. 5A shows an exploded view of the surface of dissimilar materials of Fig. 5.