sections **2962** much the same as those of **FIG. 2465** of **FIG. 24**D, except that it is set up to deposit layers onto wafers **2961** (or onto diced ICs **2510** rather than onto flexible substrates. **FIG. 29D** shows a perspective view of a processed sheet **2969** having battery material **2320** on wafer **2961** or IC **2410** and covered by a device **2430** such as a photovoltaic cell.

[**0313**] **FIG. 29E** shows a block diagram of a layer-deposition system **2965**. In some such embodiments, system **2965** deposits layers forming a photovoltaic cell device **2650** onto a wafer **2971** or IC **2510**. **FIG. 29F** shows a perspective view of a partially processed wafer **2974**. **FIG. 29G** shows a block diagram of a layer-deposition system **2960**. In some such embodiments, system **2960** deposits layers of a battery **2320**. **FIG. 29H** shows a perspective view of a processed wafer **2979**. In some embodiments, wafer **2979** represents a single device, and in other embodiments, wafer **2979** is diced or cut into a plurality of individual devices and then wired as necessary to connect the signals on the top of the device to the bottom of the device. **FIG. 291** shows a perspective view of wired diced final device **2600**.

[**0314**] Turning now to **FIGS. 30, 31** and **32**, specific examples of devices will now be provided. **FIG. 30** shows an implantable device **3000** used to stimulate specific portions of the brain. One use of such device **3000** is for deep brain neural stimulation, for example, in order to treat Parkinson's Disease. By sending signals to a specific portion of the brain the tremors associated with Parkinson's Disease may be reduced. In the past, a lead or conductor was implanted in the brain so that electrical signals may be sent to the specific area of the brain for reducing tremors. The lead passes under the skull and through the neck to a pocket near the patient's chest in current versions. As shown in **FIG. 30**, after a burr hole has been made in the skull, a port **3010** is placed in the burr hole. The port **3010** includes a cap **3012**, which is used to hold the lead in place during implantation as well as after implantation. In this particular invention, the cap **3012** is made of a suitable biocompatible material. Imbedded within the cap is a battery cell **1110** or a series of battery cells **1110**. The electronics necessary to deliver the signals at a desired rate or programmable rate is also imbedded within the cap **3012**. An RF antenna **3014** is also placed within the cap so that the battery **1110** imbedded within the cap **3012** can be recharged by passing radio frequency into the cap or inductively coupling the required energy into the cap. Another embodiment may use the lead **3020** for an energizing antenna and may include a separate antenna for programming the electronics used to deliver signals to the brain.

[**0315**] **FIG. 31A** is directed toward a pacemaker **3100**. Rather than include separate batteries within the case of the pacemaker **3100**, the enclosure, or at least one enclosure portion, includes a battery **1110** or a series of cells **1110**. The pacemaker **3100** may include an antenna **3120** which is used to direct radio frequency toward the pacemaker for recharging of the battery **1110** that is positioned within the case or enclosure of the pacemaker **3100**.

[**0316**] **FIG. 31B** shows the method for making the pacemaker **3100**. The method is comprised of a plurality of steps carrying the reference numbers **3190, 3191, 3192** and **3193**. The pacemaker **3100** includes a first half and a second half **3130**. A plurality of battery cells **1110** are formed on a substrate material **3140**, as shown by step **3190**. The substrate material **3140** is diced or cut resulting in a single cell **1110** on the sheet as diced. The single cell **1110** is adhesively bonded to the second half **3130** of the pacemaker **3100**, as shown in step **3191**. The electronics **3150** are then placed onto the battery **1110** to form a circuit with the battery **1110**, as depicted by step **3192**. The first half **3131** of the enclosure is placed over the second half **3130** to form the assembled pacemaker **3100**.

[**0317**] **FIG. 32A** is a perspective cutaway view of a watch **3200**. The watch includes a case **3210** and a band **3212** for strapping onto a person's wrist. Within the case **3210** is a solar cell **3220** and an LCD **3222**. The solar cell **3220** is attached to the battery or series of battery cells **1110**. The LCD **3222** is attached to the battery and electronic (not shown). The battery powers the LCD **3222** and is associated to electronics associated with the watch **3200**. The solar cell **3220** recharges the battery **1110** more or less continuously. Both the solar cell **3220** and the LCD **3222** appear at the crystal or glass portion of the watch. Advantageously, this type of watch can be sealed forever so that it can be made absolutely watertight.

[**0318**] Another embodiment of a watch is shown in **FIG. 32B**. In this particular instance, a circular-shaped solar cell **3240** is positioned atop a circular-shaped battery cell **1110**. The circular-shaped solar cell includes an opening **3241** therein. A set of hands for an analog watch may be inserted through the opening. The crystal or glass face of the watch will then be opened to the solar cell **3240** so that it can continuously charge the battery **1110**, which in turn powers the working portion of the watch.

Conclusion

[**0319**] One aspect of the present invention provides a combined battery and wireless-communications apparatus (e.g., **2600** of **FIG. 26** or **2700** or **FIG. 27**) including a support structure, a first conductive layer deposited on a first surface area of the support structure, a thin-film battery including a cathode layer, a solid-state electrolyte layer, and an anode layer deposited such that either the anode layer or the cathode layer is in electrical contact with the first conductive layer, and the electrolyte layer in contact with and completely separating the anode layer and the cathode layer, an antenna mounted to the support structure, and an electronic communications circuit mounted to the support structure and electrically coupled to the battery and the antenna to transceive radio communications.

[**0320**] In some embodiments, the anode or the cathode or both include an intercalation material or a metal or both.

[**0321**] In some embodiments, the cathode layer includes a lithium intercalation material deposited on the first conductive layer, and the electrolyte layer includes LiPON.

[**0322**] In some embodiments, the cathode layer includes lithium cobalt oxide deposited on the first conductive layer, and the electrolyte layer includes LiPON.

[**0323**] In some embodiments, the support structure includes a curved shape having a convex face and an opposing concave face, and the battery is located on the concave face.

[**0324**] In some embodiments, the antenna is a thin-film trace deposited on the battery.