



(12) **United States Patent**  
**Datovech et al.**

(10) **Patent No.:** **US 9,510,762 B2**  
(45) **Date of Patent:** **Dec. 6, 2016**

(54) **ELECTRODE ARRAYS**  
(71) Applicant: **LKC Technologies Inc.**, Gaithersburg, MD (US)  
(72) Inventors: **James J. Datovech**, Gaithersburg, MD (US); **Charles Quentin Davis**, Frederick, MD (US); **Bryan A. Hays**, Damascus, MD (US); **Anatolie Hobet**, Salem, OR (US); **Frank Hunleth**, Rockville, MD (US)  
(73) Assignee: **LKC TECHNOLOGIES, INC.**, Gaithersburg, MD (US)  
(\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(52) **U.S. Cl.**  
CPC ..... **A61B 5/04001** (2013.01); **A61B 5/0478** (2013.01); **A61B 5/04085** (2013.01); (Continued)  
(58) **Field of Classification Search**  
CPC ..... **A61B 5/04085**; **A61B 5/04087**; **A61B 5/0478**; **A61B 5/0492**; **A61B 5/0476**; **A61B 2562/222**; **A61B 2562/227**; **A61B 5/04001**; **A61B 5/6814**  
See application file for complete search history.

(56) **References Cited**  
**U.S. PATENT DOCUMENTS**  
4,583,549 A \* 4/1986 Manoli ..... **A61B 5/411** 600/391  
4,763,660 A \* 8/1988 Kroll ..... **A61B 5/04085** 439/77  
(Continued)

(21) Appl. No.: **14/426,063**  
(22) PCT Filed: **Sep. 4, 2013**  
(86) PCT No.: **PCT/US2013/058007**  
§ 371 (c)(1),  
(2) Date: **Mar. 4, 2015**  
(87) PCT Pub. No.: **WO2014/039525**  
PCT Pub. Date: **Mar. 13, 2014**  
(65) **Prior Publication Data**  
US 2015/0265173 A1 Sep. 24, 2015

**FOREIGN PATENT DOCUMENTS**  
EP 1629768 A2 3/2006

**OTHER PUBLICATIONS**  
International Search Report Issued in International PCT Application PCT/US2013/058007 dated Dec. 24, 2013.  
(Continued)

*Primary Examiner* — Lee S Cohen  
(74) *Attorney, Agent, or Firm* — Andrews Kurth Kenyon LLP; Sean S. Wooden

**Related U.S. Application Data**  
(60) Provisional application No. 61/696,499, filed on Sep. 4, 2012.  
(51) **Int. Cl.**  
**A61B 5/0478** (2006.01)  
**A61B 5/04** (2006.01)  
(Continued)

(57) **ABSTRACT**  
Electrode arrays have a plurality of electrodes. These arrays may have any combination of the following improvements. The arrays may have features that enable easier electrical connections and reduced bending stiffness by having a stop region and a torsion relief region, respectively. The arrays may have a shielding feature that may reduce electrical interference. The arrays may come in pairs that are designed to simplify measurements of electric signals of bilateral organs and tissues, such as eyes and ears.

**13 Claims, 4 Drawing Sheets**

