

# PATENTSIGHT



## PATENT EVALUATION SHEETS



## GLOSSARY

### Patent Asset Index

The measure of overall patent portfolio strength. Calculated as the sum of the Competitive Impact™ of all patents contained in the portfolio.

### Competitive Impact (CI)

The economic value of the patents as measured by its Technology Relevance™ and Market Coverage™. Competitive Impact™ is stated relative to the other patents in the same field (e.g. a value of three means that the patent is three times as important as the average patent in the field).

### Technology Relevance (TR)

The relevance of the patent for the technical development. It is measured by looking at worldwide prior art citations to the patent (similar to how Google rates web pages by the links they get from other web pages).

### Recent Technology Relevance

The average Technology Relevance during the last 12 months (based on citations made during the last 12 months before the Reporting Date only).

### External Technology Relevance

Average share of external Technology Relevance (Technology Relevance based on citations made by third parties only/Technology Relevance).

### Market Coverage (MC)

The existence of active patent rights on the invention in world markets. If a larger market size is protected, Market Coverage is higher and the patent thus has a higher Competitive Impact.

# METHOD AND SYSTEM FOR PLACING A PURCHASE ORDER VIA A COMMUNICATIONS NETWORK



EP2299398.A1 et al.

Owner: Amazon

First filing: 1998

Family members: AT238589.T, AU2011200505.A1, AU762175.B2, AU9477998.A, CA2246933.A1, .C, CA2263781.A1, CA2650298.A1, .D, EP0902381.A2, .A3, EP0927945.A2, .A3, .B1, EP1134680.A1, JP2000099592.A, JP2010160799.A, JP4937434.B2, JP49598... NZ503311.A, WO9913424.A1

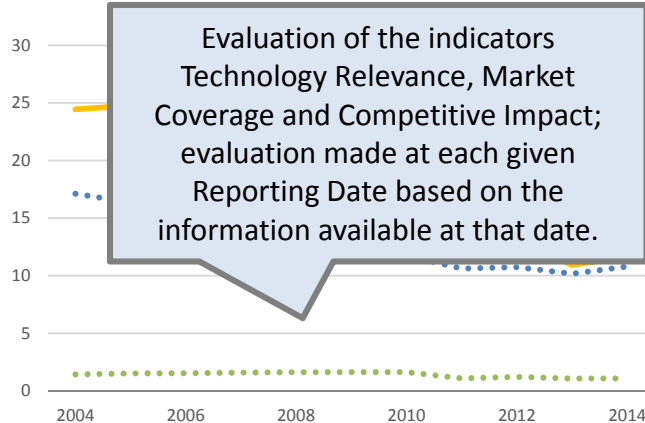
Earliest filing date in the family

Abstract: A method and system for placing an order to purchase an item via the Internet. The order is placed by a purchaser at a client system and received by a server system. The server system receives purchaser information including identification of the purchaser, payment information, and shipment information from the client system. The server system then assigns a client identifier to the client system and associates the assigned client identifier with the received purchaser information. The server system sends to the client system the assigned client identifier and an HTML document identifying the item and including an ...

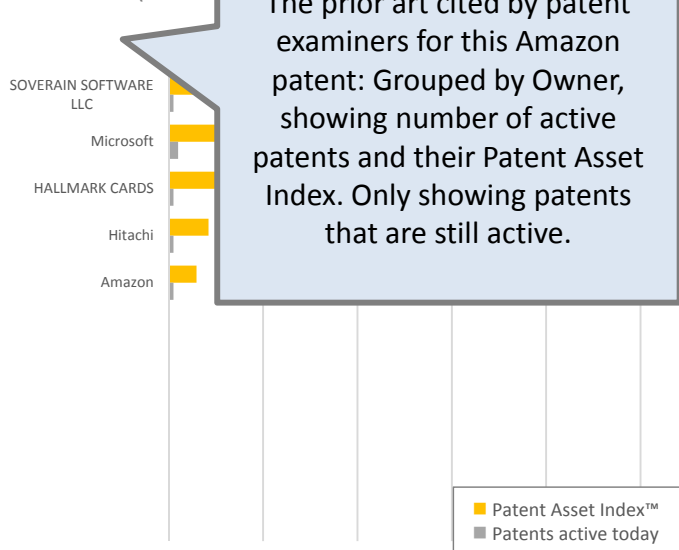
Value class	Value Indicators and legal status	%
Competitive Impact™		10,6
Technology Relevance™ (TR)		10,8
Recent Technology Relevance™		6,7
Ext. Technology Relevance™		95%
Market Coverage™ (MC)		1,1

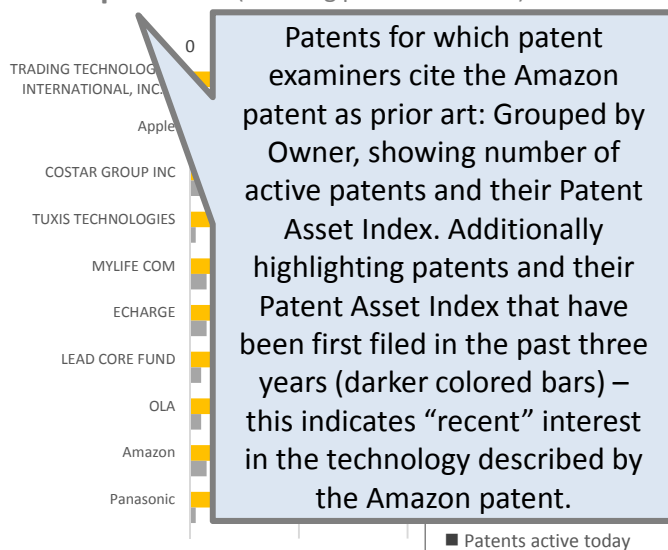
Granted & active	AU; CA; DE; FR; IT; JP
Pending	-
Attacked	Yes



## Prior Art (21 cited)



## Subsequent Art (86 citing patent families\*)



CI	Owner	Sample title	Sample member
SOVERAIN SOFTWARE LLC	SOVERAIN SOFTWARE LLC	Network Sales System	EP0803105.A1 et al.
Microsoft	Microsoft	System And A Distributed	
HALLMARK CARDS	HALLMARK CARDS	Method And A Card Distribut	
Hitachi	Hitachi	Delivery Manag	
Amazon	Amazon	Secure Method Of Credit Card	
Microsoft	Microsoft	Method And Sy	(1995+)

The top prior art patents cited by patent examiners for this Amazon patent: ranked by Competitive Impact. Only showing patents that are still active.

Color code refers to the Competitive Impact™ of the patent family (orange: high; light yellow: low)

CI	Owner	Sample title	Sample member
TRADING TECHNOLOGIES INTERNATIONAL, INC.	TRADING TECHNOLOGIES INTERNATIONAL, INC.	A Device And Method For Facilitating Trading Having A EP2299401.A2 et al. Reentering	
Apple	Apple	Netw	al.
Apple	Apple	Method A Distribution	al.
Apple	Apple	Methods Ar Distribution	al.
TUXIS TECHNOLOGIES	TUXIS TECHNOLOGIES	Methods Ar based Select	al.
COSTAR GROUP INC	COSTAR GROUP INC	System And Use Of Information In Connection With Commercial...	(2000+)
TRADING TECHNOLOGIES INTERNATIONAL, INC.	TRADING TECHNOLOGIES INTERNATIONAL, INC.	Click Based Trading With Market Depth Display	US2005149429.A1 et al. (2000+)
Panasonic	Panasonic	Information Distribution System And Distribution Server	US6792280.B1 et al. (2000+)
COSTAR GROUP INC	COSTAR GROUP INC	System And Method For Associating Aerial Images, Map Features, And Information	US2005203768.A1 et al. (2005+)
OLA	OLA	Builders On-line Assistant	US7076455.B1 (2000+)

The top subsequent art patents citing this Amazon patent: ranked by Competitive Impact. Only showing patents that are still active.



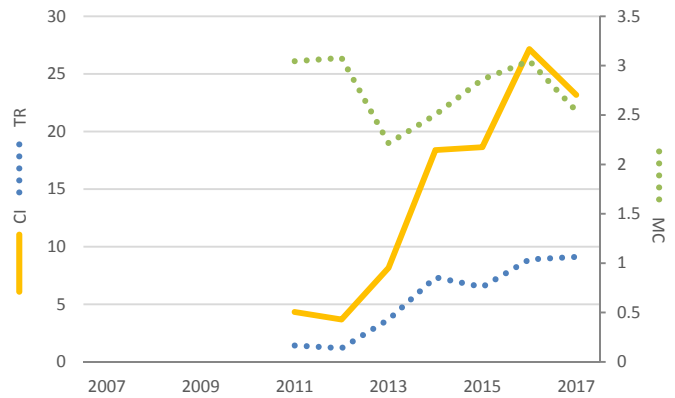
Patent family	Title	CI	Page
EP2547258.A1 et al.	Implantable biomedical devices on bioresorbable substrates	23.2	5
EP2830492.A1 et al.	Appendage mountable electronic devices conformable to surfaces	21.6	6
EP2786644.A2 et al.	Transient devices designed to undergo programmable transformations	13.5	7
EP2984910.A1 et al.	Transient electronic devices comprising inorganic or hybrid inorganic and organic substrates and encapsulates	11.4	8
EP2713863.A2 et al.	Conformable actively multiplexed high-density surface electrode array for brain interfacing	10.1	9
EP2513953.A1 et al.	High-speed, high-resolution electrophysiology in-vivo using conformal electronics	9.4	10
US2013041235.A1	Flexible and stretchable electronic systems for epidermal electronics	8.5	11
EP2945699.A1 et al.	Implantable transient nerve stimulation device	5.2	12
EP3052017.A2 et al.	Organ mounted electronics	3.5	13
US2012165759.A1	Waterproof stretchable optoelectronics	3.1	14



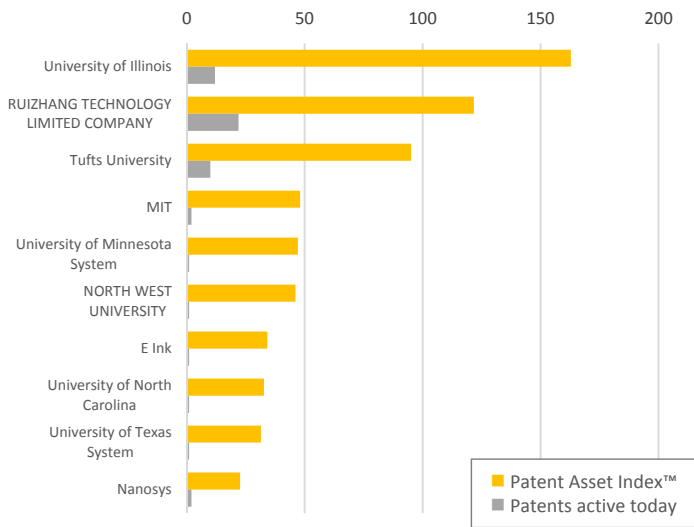
Family members: [CN102892356.A](#), [.B](#), [CN104224171.A](#), [CN105496423.A](#), [EP2547258.A1](#), [.A4](#), [.B1](#), [EP2974673.A1](#), [.B1](#), [HK1205445.A1](#), [JP2013524866.A](#), [JP2015164564.A](#), [JP5751728.B2](#), [KR101724273.B1](#), [KR20130057983.A](#), [KR20170033906.A](#), [US2011230747.A1](#), [US2014163390.A1](#), [US8666471.B2](#), [WO2011115643.A1](#)

Abstract: Provided herein are implantable biomedical devices, methods of administering implantable biomedical devices, methods of making implantable biomedical devices, and methods of using implantable biomedical devices to actuate a target tissue or sense a parameter associated with the target tissue in a bi...

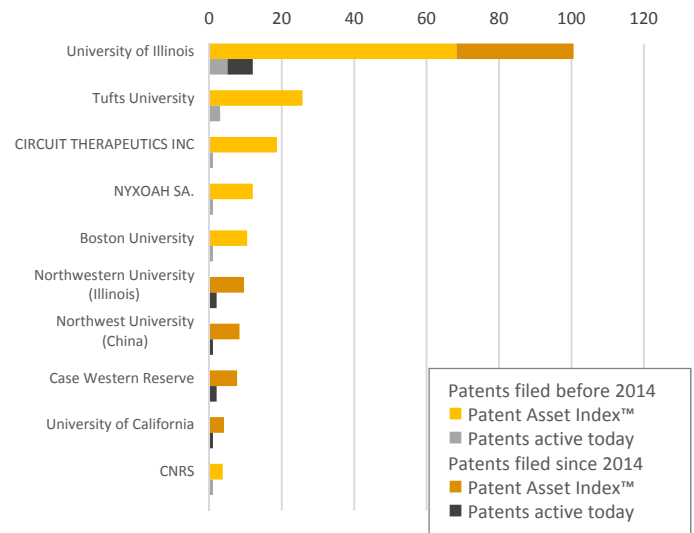
Value class	Top 5%
<b>Competitive Impact™ (CI)</b>	23,2
Technology Relevance™ (TR)	9,1
Recent Technology Relevance™	10,1
Ext. Technology Relevance™	65%
Market Coverage™ (MC)	2,5
<b>Granted &amp; active</b>	CH; CN; DE; FR; GB; HK; IE; JP; KR; US
<b>Pending</b>	-
<b>Attacked</b>	-



**Prior Art** (111 active cited patents - 189 total)



**Subsequent Art** (37 active citing patents - 37 total)



CI Owner	Sample title	Sample member
University of Minnesota System	Release Surfaces, Particularly For Use In Nanoimprint Lithography	<a href="#">CN1309784.A</a> et al. (1995+)
University of Illinois	Method And Device For Manufacturing And Assembling Printable Semiconductor Element	<a href="#">EP1759422.A2</a> et al. (2005+)
NORTH WEST UNIVERSITY	Stretchable And Foldable Electronic Device	<a href="#">EP2255378.A1</a> et al. (2009+)
E Ink	Preferred Methods For Producing Electrical Circuit Elements Used To Control An Electronic Display	<a href="#">EP1198852.A1</a> et al. (2000+)
University of North Carolina	Method For Fabrication Of Isolated Micro-and Nanostructures Using Soft Or Imprint Lithography	<a href="#">EP1704585.A2</a> et al. (2004+)
University of Texas System	Step And Flash Imprint Lithography	<a href="#">EP1228401.A1</a> et al. (1999+)
Tufts University, MIT	Silk Biomaterials And Methods Of Use Thereof	<a href="#">EP1558444.A2</a> et al. (2013+)
University of Illinois	Composite Patterning Devices For Soft Lithography	<a href="#">EP1742893.A2</a> et al. (2005+)
Tufts University	Concentrated Aqueous Silk Fibroin Solutions Free Of Organic Solvents And Uses Thereof	<a href="#">EP1613796.A2</a> et al. (2004+)
OneD Material	Methods Of Making, Positioning And Orienting Nanostructures, Nanostructure Arrays And Nanostr...	<a href="#">US2003186522.A1</a> et al. (2002+)

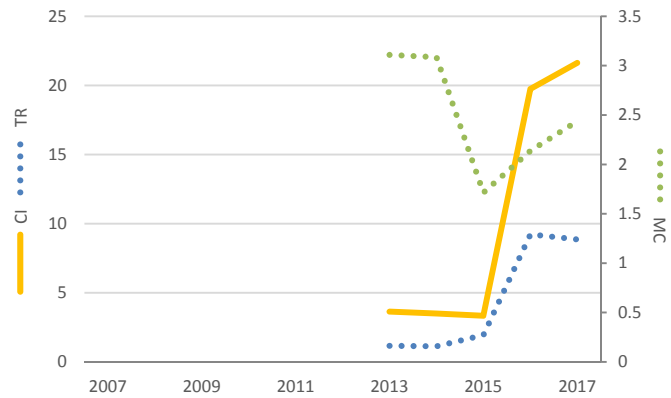
CI Owner	Sample title	Sample member
University of Illinois	Appendage Mountable Electronic Devices Conformable To Surfaces	<a href="#">EP2830492.A1</a> et al. (2013+)
CIRCUIT THERAPEUTICS INC	System And Method For Optogenetic Therapy	<a href="#">EP2922476.A1</a> et al. (2013+)
University of Illinois	Peeling Method For Producing Transferable Semiconductor Structure, Device, And Device Com...	<a href="#">EP2064734.A2</a> et al. (2007+)
University of Illinois	Transient Devices Designed To Undergo Programmable Transformations	<a href="#">EP2786644.A2</a> et al. (2012+)
University of Illinois	Controlled Buckling Structures In Semiconductor Interconnects And Nanomembranes For Stretchabl...	<a href="#">US2008157235.A1</a> et al. (2007+)
NYXOAH SA.	Implant Sleep Apnea Treatment Device Including An Antenna	<a href="#">EP2877090.A2</a> et al. (2013+)
University of Illinois	Transient Electronic Devices Comprising Inorganic Or Hybrid Inorganic And Organic Substrates And Encap...	<a href="#">EP2984910.A1</a> et al. (2014+)
Tufts University	Electroactive Biopolymer Optical And Electro-optical Devices And Method Of Manufacturing The Same	<a href="#">EP2107964.A2</a> et al. (2007+)
Boston University, Tufts University	Silk Electronic Components	<a href="#">EP2559101.A2</a> et al. (2011+)
University of Illinois, Northwestern University (China), Northwestern University (Illinois)	Stretchable Electronic Systems With Containment Chambers	<a href="#">EP2954551.A1</a> et al. (2014+)



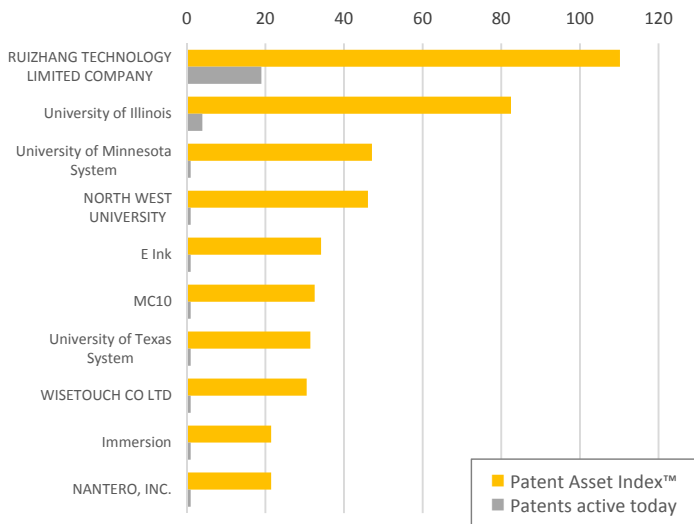
Family members: [CN105283122.A](#), [EP2830492.A1](#), [.A4](#), [JP2015521303.A](#), [KR20150004819.A](#), [US2013333094.A1](#), [US9554484.B2](#), [WO2013149181.A1](#)

Abstract: Disclosed are appendage mountable electronic systems and related methods for covering and conforming to an appendage surface. A flexible or stretchable substrate has an inner surface for receiving an appendage, including an appendage having a curved surface, and an opposed outer surface that is accessible to external surfaces. A stretchable or flexible electronic device is supported by the substrate inner and/or outer surface, depending on the application of interest. The electronic device in combination with the substrate provides a net bending stiffness to facilitate conformal contact between the inner surface and a ...

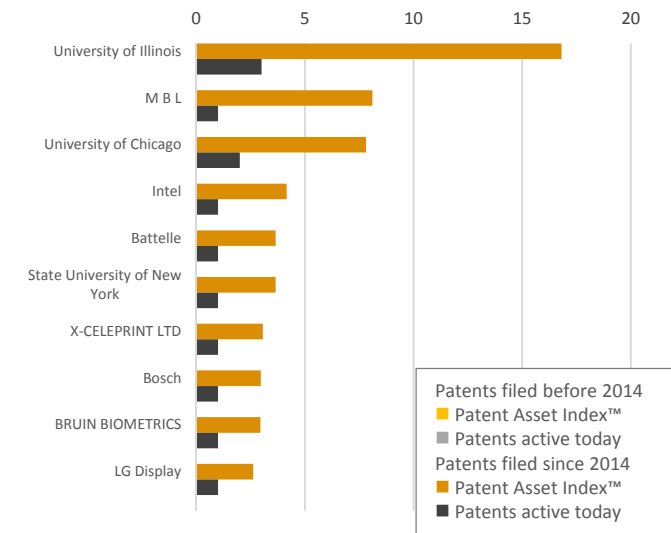
Value class	Top 5%
<b>Competitive Impact™ (CI)</b>	21,6
<b>Technology Relevance™ (TR)</b>	8,9
<b>Recent Technology Relevance™</b>	12,7
<b>Ext. Technology Relevance™</b>	84%
<b>Market Coverage™ (MC)</b>	2,4
<b>Granted &amp; active</b>	US
<b>Pending</b>	CN; EP; JP; KR
<b>Attacked</b>	-



**Prior Art** (56 active cited patents - 111 total)



**Subsequent Art** (20 active citing patents - 21 total)



CI Owner	Sample title	Sample member
University of Minnesota System	Release Surfaces, Particularly For Use In Nanoimprint Lithography	<a href="#">CN1309784.A</a> et al. (1995+)
NORTH WEST UNIVERSITY	Stretchable And Foldable Electronic Device	<a href="#">EP2255378.A1</a> et al. (2009+)
University of Illinois	Printed Assemblies Of Ultrathin, Microscale Inorganic Light Emitting Diodes For Deformable An...	<a href="#">EP2430652.A1</a> et al. (2010+)
E Ink	Preferred Methods For Producing Electrical Circuit Elements Used To Control An Electronic Display	<a href="#">EP1198852.A1</a> et al. (2000+)
MC10	Systems, Methods, And Devices Having Stretchable Integrated Circuitry For Sensing And Delivering The...	<a href="#">EP3073948.A1</a> et al. (2010+)
University of Texas System	Step And Flash Imprint Lithography	<a href="#">EP1228401.A1</a> et al. (1999+)
WISETOUGH CO LTD	Reconfigurable Tactile Sensor Input Device	<a href="#">EP2020083.A2</a> et al. (2006+)
University of Illinois	Implantable Biomedical Devices On Bioresorbable Substrates	<a href="#">EP2547258.A1</a> et al. (2010+)
Immersion	Method And Apparatus For Providing Haptic Feedback From Haptic Textile	<a href="#">EP2374049.A1</a> et al. (2008+)
NANTERO, INC.	Nanotube Films And Articles	<a href="#">US2003198812.A1</a> et al. (2002+)

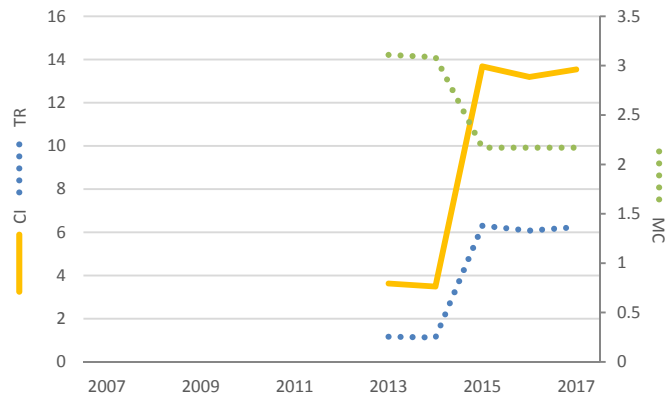
CI Owner	Sample title	Sample member
University of Illinois	Transient Electronic Devices Comprising Inorganic Or Hybrid Inorganic And Organic Substrates And Encap...	<a href="#">EP2984910.A1</a> et al. (2014+)
M B L	Methods And Systems For Food Preparation In A Robotic Cooking Kitchen	<a href="#">EP3107429.A2</a> et al. (2015+)
University of Chicago	Piezoresistive Boron Doped Diamond Nanowire	<a href="#">US2016209199.A1</a> et al. (2015+)
Intel	Flexible Sensor	<a href="#">EP3123285.A1</a> et al. (2014+)
University of Illinois	Epidermal Devices For Analysis Of Temperature And Thermal Transport Characteristics	<a href="#">WO2016025438.A1</a> et al. (2015+)
University of Chicago, Battelle, State University of New York	Ultrananocrystalline Diamond Contacts For Electronic Devices	<a href="#">US9484474.B1</a> et al. (2015+)
X-CELEPRINT LTD	Apparatus And Methods For Micro-transfer Printing	<a href="#">US2016016399.A1</a> et al. (2015+)
Bosch	Modular Deformable Platform	<a href="#">WO2016100218.A1</a> (2015+)
BRUIN BIOMETRICS	Apparatus And Methods For Determining Damaged Tissue Using Sub-epidermal Moisture Measurements	<a href="#">EP3092946.A1</a> et al. (2016+)
LG Display	Flexible Display Device With Reduced Bend Stress Wires	<a href="#">WO2016053252.A1</a> (2014+)



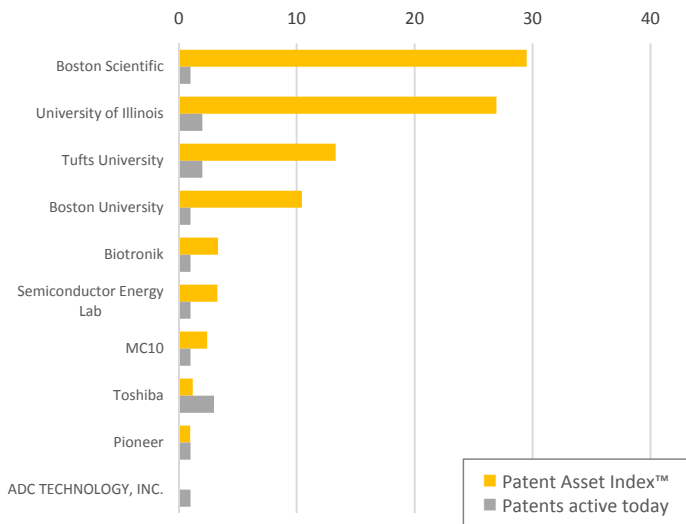
Family members: [CN104472023.A](#), [EP2786644.A2](#), [.A4](#), [HK1204205.A1](#), [JP2015512136.A](#), [KR20140099934.A](#), [TW201347173.A](#), [US2013140649.A1](#), [WO2013089867.A2](#), [.A3](#)

Abstract: The invention provides transient devices, including active and passive devices that electrically and/or physically transform upon application of at least one internal and/or external stimulus. Materials, modeling tools, manufacturing approaches, device designs and system level examples of transient electronics are provided.

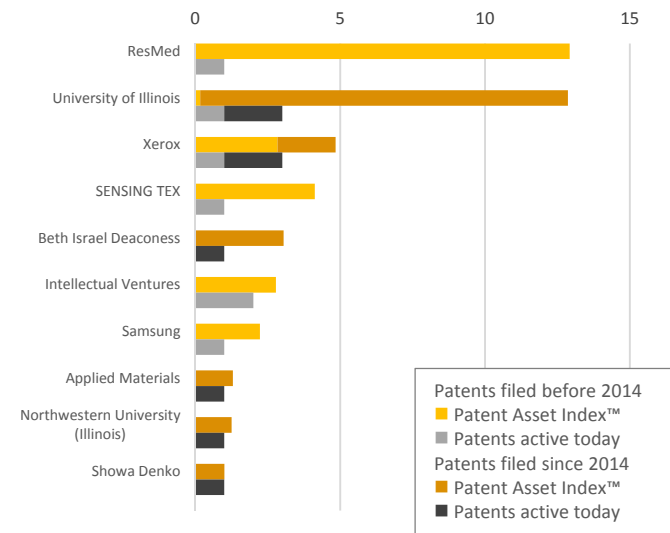
Value class	Top 5%
<b>Competitive Impact™ (CI)</b>	13,5
<b>Technology Relevance™ (TR)</b>	6,2
<b>Recent Technology Relevance™</b>	8,9
<b>Ext. Technology Relevance™</b>	83%
<b>Market Coverage™ (MC)</b>	2,2
<b>Granted &amp; active</b>	-
<b>Pending</b>	CN; EP; HK; JP; KR; TW; US
<b>Attacked</b>	-



**Prior Art** (13 active cited patents - 18 total)



**Subsequent Art** (21 active citing patents - 21 total)



CI	Owner	Sample title	Sample member
Orange	Boston Scientific	Implantable Drug Delivery Device	<a href="#">EP1229901.A1</a> et al. (2000+)
Yellow	University of Illinois	Implantable Biomedical Devices On Bioresorbable Substrates	<a href="#">EP2547258.A1</a> et al. (2010+)
Orange	Boston University, Tufts University	Silk Electronic Components	<a href="#">EP2559101.A2</a> et al. (2011+)
Yellow	University of Illinois	Pattern Transfer Printing By Kinetic Control Of Adhesion To An Elastomeric Stamp	<a href="#">EP1915774.A2</a> et al. (2006+)
Yellow	Biotronik	Biocorrosible Implant In Which Corrosion May Be Triggered Or Accelerated After Implantation By Me...	<a href="#">EP2384725.A1</a> et al. (2011+)
Yellow	Semiconductor Energy Lab	Nonvolatile Memory And Writing Method Thereof, And Semiconductor Device	<a href="#">US2007147129.A1</a> et al. (2006+)
Yellow	Tufts University	Silk Transistor Devices	<a href="#">EP2474054.A2</a> et al. (2010+)
Yellow	MC10	Systems, Methods, And Devices Using Stretchable Or Flexible Electronics For Medical Applications	<a href="#">EP2378956.A2</a> et al. (2009+)
Yellow	Pioneer	Semiconductor Memory Element And Its Lifetime Operation Starting Device	<a href="#">US2007252143.A1</a> et al. (2002+)
Yellow	Toshiba	Nonvolatile Semiconductor Memory	<a href="#">US2008142870.A1</a> et al. (2006+)

CI	Owner	Sample title	Sample member
Orange	ResMed	Range Gated Radio Frequency Physiology Sensor	<a href="#">EP2874535.A1</a> et al. (2013+)
Yellow	University of Illinois	Transient Electronic Devices Comprising Inorganic Or Hybrid Inorganic And Organic Substrates And Encap...	<a href="#">EP2984910.A1</a> et al. (2014+)
Yellow	SENSING TEX	A Large-area Extensible Pressure Sensor For Textiles Surfaces	<a href="#">EP2682724.A1</a> et al. (2012+)
Yellow	Beth Israel Deaconess	Activation Of Antimicrobial Agents	<a href="#">WO2015148726.A1</a> (2015+)
Yellow	Xerox	Stressed Substrates For Transient Electronic Systems	<a href="#">US2015102852.A1</a> et al. (2013+)
Yellow	Intellectual Ventures	Cost-effective Mobile Connectivity Protocols	<a href="#">EP2939370.A1</a> et al. (2012+)
Yellow	Samsung	Stretchable Antenna And Manufacturing Method Of The Same	<a href="#">US2014118201.A1</a> et al. (2012+)
Yellow	Applied Materials	Method And Apparatus For Processing Solar Cell	<a href="#">US2015162457.A1</a> et al. (2014+)
Yellow	University of Illinois, Northwestern University (Illinois)	Self-similar And Fractal Design For Stretchable Electronics	<a href="#">US2015380355.A1</a> et al. (2014+)
Yellow	Showa Denko	Method For Manufacturing Electroconductive Pattern And Electroconductive Pattern-formed Subs...	<a href="#">EP2991083.A1</a> et al. (2014+)

● TRANSIENT ELECTRONIC DEVICES COMPRISING INORGANIC OR HYBRID INORGANIC AND ORGANIC SUBSTRATES AND ENCAPSULATES



EP2984910.A1 et al.

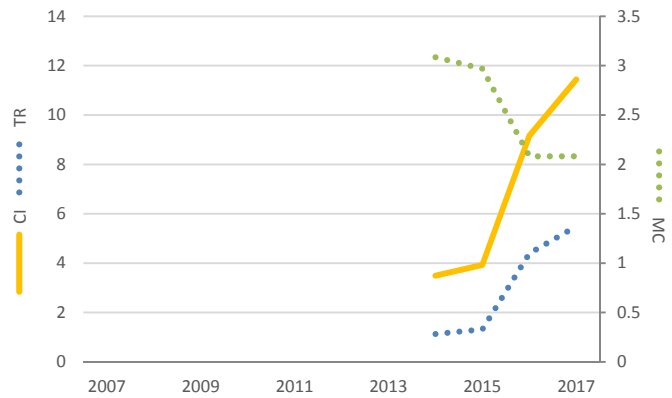
Owner: University of Illinois

First filing: 2014

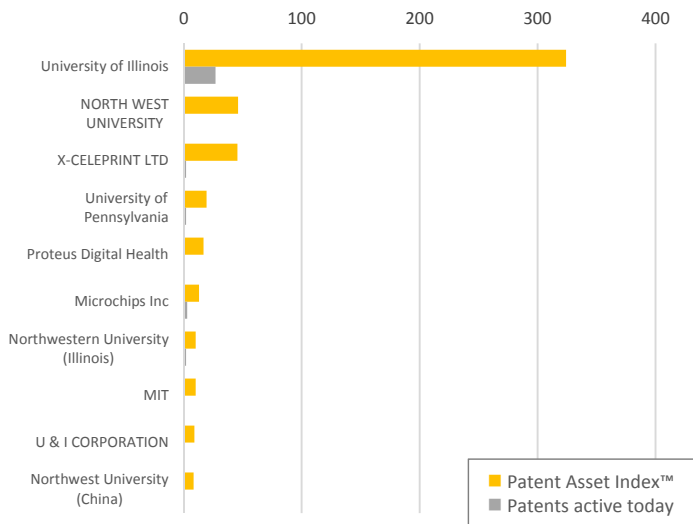
Family members: [AU2014250792.A1](#), [AU2014250839.A1](#), [CA2909313.A1](#), [CA2909344.A1](#), [EP2984910.A1](#), [.A4](#), [EP2984912.A2](#), [.A4](#), [JP2016527701.A](#), [JP2016528712.A](#), [US2014305900.A1](#), [US2014323968.A1](#), [US9496229.B2](#), [WO2014169170.A1](#), [WO2014169218.A2](#), [.A3](#)

Abstract: The invention provides transient devices, including active and passive devices that physically, chemically and/or electrically transform upon application of at least one internal and/or external stimulus. Incorporation of degradable device components, degradable substrates and/or degradable encapsulating materials each having a programmable, controllable and/or selectable degradation rate provides a means of transforming the device. In some embodiments, for example, ...

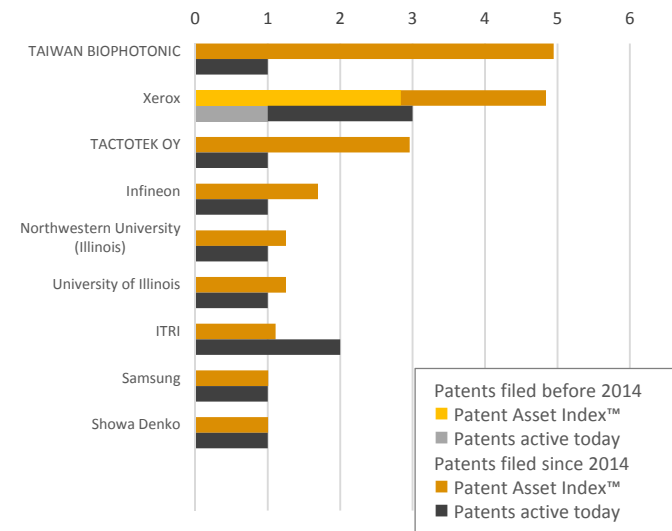
Value class	Top 5%
<b>Competitive Impact™ (CI)</b>	11,4
<b>Technology Relevance™ (TR)</b>	5,5
<b>Recent Technology Relevance™</b>	8,1
<b>Ext. Technology Relevance™</b>	94%
<b>Market Coverage™ (MC)</b>	2,1
<b>Granted &amp; active</b>	US
<b>Pending</b>	AU; CA; EP; JP
<b>Attacked</b>	-



**Prior Art** (49 active cited patents - 55 total)



**Subsequent Art** (11 active citing patents - 11 total)



CI Owner	Sample title	Sample member
University of Illinois	Method And Device For Manufacturing And Assembling Printable Semiconductor Element	<a href="#">EP1759422.A2</a> et al. (2005+)
NORTH WEST UNIVERSITY	Stretchable And Foldable Electronic Device	<a href="#">EP2255378.A1</a> et al. (2009+)
University of Illinois	Printed Assemblies Of Ultrathin, Microscale Inorganic Light Emitting Diodes For Deformable An...	<a href="#">EP2430652.A1</a> et al. (2010+)
X-CELEPRINT LTD	Semiconductor-based Optical System And Method Of Making The Same	<a href="#">EP2104954.A1</a> et al. (2007+)
University of Illinois	Composite Patterning Devices For Soft Lithography	<a href="#">EP1742893.A2</a> et al. (2005+)
University of Illinois	Implantable Biomedical Devices On Bioresorbable Substrates	<a href="#">EP2547258.A1</a> et al. (2010+)
University of Illinois	Appendage Mountable Electronic Devices Conformable To Surfaces	<a href="#">EP2830492.A1</a> et al. (2013+)
University of Illinois	Methods And Devices For Fabricating Three-dimensional Nanoscale Structures	<a href="#">EP1700161.A2</a> et al. (2004+)
Proteus Digital Health	Medical Diagnostic And Treatment Platform Using Near-field Wireless Communication Of Information...	<a href="#">EP1920418.A2</a> et al. (2006+)
University of Illinois	Peeling Method For Producing Transferable Semiconductor Structure, Device, And Device Com...	<a href="#">EP2064734.A2</a> et al. (2007+)

CI Owner	Sample title	Sample member
TAIWAN BIOPHOTONIC	Reflective Optical Sensor Module	<a href="#">EP3057138.A1</a> et al. (2016+)
TACTOTEK OY	Multi-material Structure With Embedded Electronics	<a href="#">US2016295702.A1</a> et al. (2015+)
Xerox	Stressed Substrates For Transient Electronic Systems	<a href="#">US2015102852.A1</a> et al. (2013+)
Infineon	Device And Method For Manufacturing A Device	<a href="#">US2016043034.A1</a> et al. (2014+)
University of Illinois, Northwestern University (Illinois)	Self-similar And Fractal Design For Stretchable Electronics	<a href="#">US2015380355.A1</a> et al. (2014+)
Samsung	Organic Light Emitting Display Device And Manufacturing Method Thereof	<a href="#">US2016164033.A1</a> et al. (2014+)
Showa Denko	Method For Manufacturing Electroconductive Pattern And Electroconductive Pattern-formed Subs...	<a href="#">EP2991083.A1</a> et al. (2014+)
Xerox	Thermally Tempered Glass Substrate Using Cte Mismatched Layers And Paste Mixtures For Transie...	<a href="#">US2015358021.A1</a> et al. (2015+)
Xerox	Integration Of Semiconductor Epilayers On Non-native Substrates	<a href="#">US2017012101.A1</a> et al. (2015+)
ITRI	Flexible Environmental Sensitive Electronic Device Package	<a href="#">US2016218320.A1</a> (2016+)



# CONFORMABLE ACTIVELY MULTIPLEXED HIGH-DENSITY SURFACE ELECTRODE ARRAY FOR BRAIN INTERFACING



EP2713863.A2 et al.

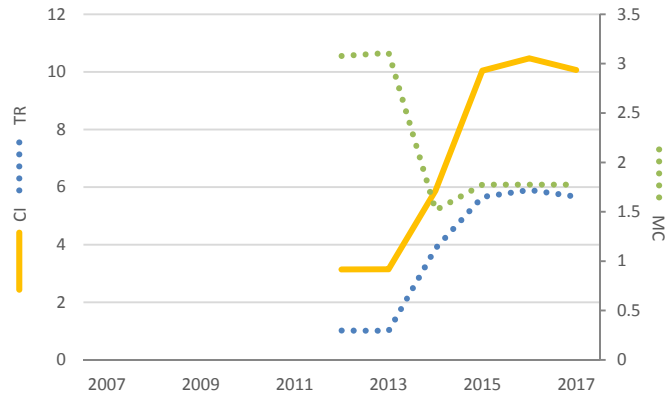
Owner: University of Illinois, University of Pennsylvania

First filing: 2012

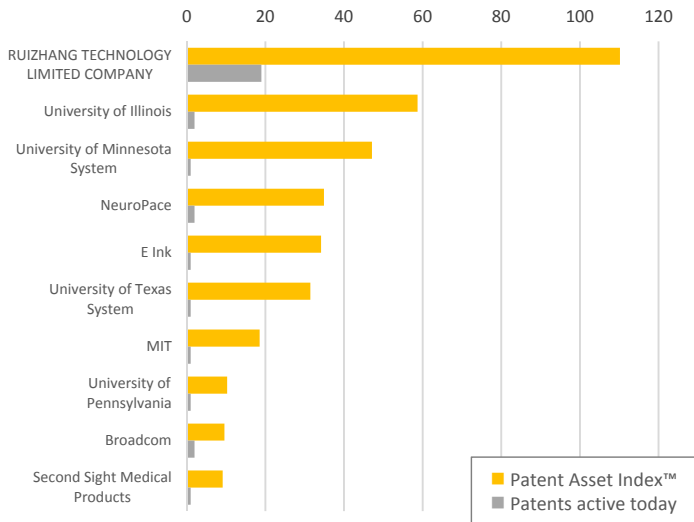
Family members: [EP2713863.A2](#), [.A4](#), [US2013072775.A1](#), [US2015080695.A1](#), [US8934965.B2](#), [WO2012167096.A2](#), [.A3](#)

Abstract: Provided are methods and devices for interfacing with brain tissue, specifically for monitoring and/or actuation of spatio-temporal electrical waveforms. The device is conformable having a high electrode density and high spatial and temporal resolution. A conformable substrate supports a conformable electronic circuit and a barrier layer. Electrodes are positioned to provide electrical contact with a brain tissue. A controller monitors or actuates the electrodes, thereby interfacing with the brain tissue. In an aspect, methods are provided to monitor or actuate spatio-temporal electrical waveform over large brain surface areas by any of the devices disclosed herein.

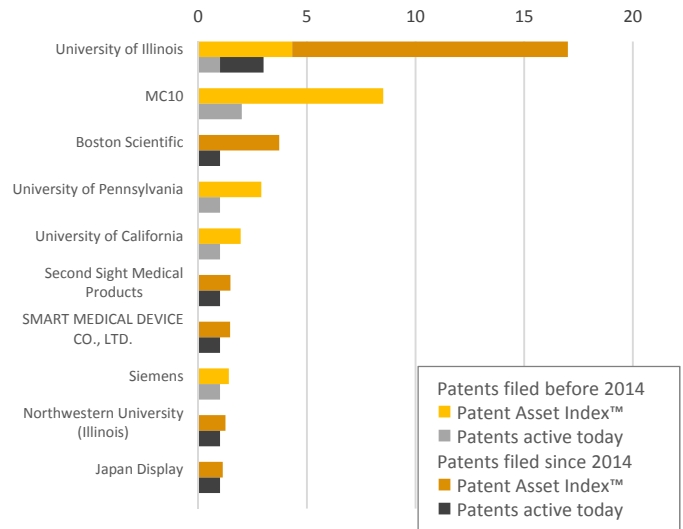
Value class	Top 5%
<b>Competitive Impact™ (CI)</b>	10,1
Technology Relevance™ (TR)	5,7
Recent Technology Relevance™	4,0
Ext. Technology Relevance™	88%
Market Coverage™ (MC)	1,8
<b>Granted &amp; active</b>	US
<b>Pending</b>	EP
<b>Attacked</b>	-



## Prior Art (51 active cited patents - 105 total)



## Subsequent Art (17 active citing patents - 17 total)



CI Owner	Sample title	Sample member
University of Minnesota System	Release Surfaces, Particularly For Use In Nanoimprint Lithography	<a href="#">CN1309784.A</a> et al. (1995+)
University of Illinois	Method And Device For Manufacturing And Assembling Printable Semiconductor Element	<a href="#">EP1759422.A2</a> et al. (2005+)
E Ink	Preferred Methods For Producing Electrical Circuit Elements Used To Control An Electronic Display	<a href="#">EP1198852.A1</a> et al. (2000+)
NeuroPace	Responsive Implantable System For The Treatment Of Neurological Disorders	<a href="#">EP0911061.A2</a> et al. (1997+)
University of Texas System	Step And Flash Imprint Lithography	<a href="#">EP1228401.A1</a> et al. (1999+)
MIT	Fabrication Of Finely Featured Devices By Liquid Embossing	<a href="#">US6517995.B1</a> et al. (2000+)
University of Illinois	Controlled Buckling Structures In Semiconductor Interconnects And Nanomembranes For Stretchabl...	<a href="#">US2008157235.A1</a> et al. (2007+)
RUIZHANG TECHNOLOGY LIMITED COMPANY	Electronic Devices With Small Functional Elements Supported On A Carrier	<a href="#">US2002181208.A1</a> et al. (2001+)
RUIZHANG TECHNOLOGY LIMITED COMPANY	Methods And Apparatus For Fabricating A Multiple Modular Assembly	<a href="#">EP1181720.A1</a> et al. (1999+)
University of Pennsylvania	Flexible And Scalable Sensor Arrays For Recording And Modulating Physiologic Activity	<a href="#">EP2265171.A1</a> et al. (2009+)

CI Owner	Sample title	Sample member
University of Illinois	Transient Electronic Devices Comprising Inorganic Or Hybrid Inorganic And Organic Substrates And Encap...	<a href="#">EP2984910.A1</a> et al. (2014+)
MC10	Systems, Methods, And Devices Using Stretchable Or Flexible Electronics For Medical Applications	<a href="#">US2010298895.A1</a> et al. (2009+)
University of Illinois	Arrays Of Ultrathin Silicon Solar Microcells	<a href="#">US2011277813.A1</a> et al. (2009+)
Boston Scientific	Systems And Methods For Analyzing Electrical Stimulation And Selecting Or Manipulating Volume...	<a href="#">US2016346557.A1</a> et al. (2016+)
MC10	Methods And Apparatus For Conformal Sensing Of Force And/Or Acceleration At A Person's Head	<a href="#">US2011215931.A1</a> et al. (2010+)
University of Pennsylvania	Method For Automatic, Unsupervised Classification Of High-frequency Oscillations In Physiological Reco...	<a href="#">US2012245481.A1</a> et al. (2012+)
University of California	In Vivo Visualization And Control Of Pathological Changes In Neural Circuits	<a href="#">EP2753239.A2</a> et al. (2012+)
Second Sight Medical Products	Cortical Visual Prosthesis	<a href="#">US2014222103.A1</a> et al. (2014+)
SMART MEDICAL DEVICE CO., LTD.	Device For Measuring Bioelectrical Signals And Stimulating Body Using Mesh Structure	<a href="#">EP3075412.A1</a> et al. (2014+)
Siemens	Time-resolved Phase-contrast Mr Imaging With Speed Encoding	<a href="#">US2014285194.A1</a> et al. (2013+)

# ● HIGH-SPEED, HIGH-RESOLUTION ELECTROPHYSIOLOGY IN-VIVO USING CONFORMAL ELECTRONICS



EP2513953.A1 et al.

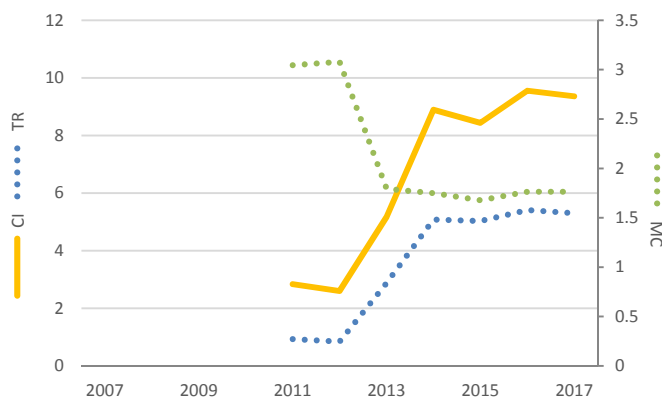
Owner: University of Pennsylvania

First filing: 2010

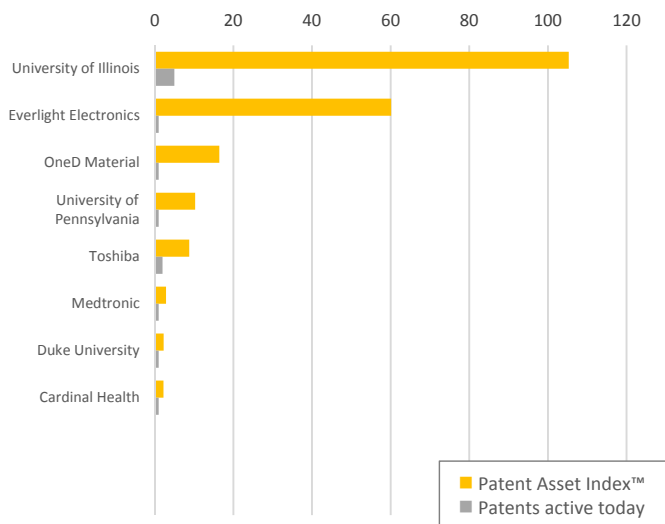
Family members: [EP2513953.A1](#), [A4](#), [JP2013514146.A](#), [JP6046491.B2](#), [TW201129342.A](#), [TW201639525.A](#), [TWI535417.B](#), [US2012157804.A1](#), [WO2011084450.A1](#)

Abstract: Provided herein are biomedical devices and methods of making and using biomedical devices for sensing and actuation applications. For example, flexible and/or stretchable biomedical devices are provided including electronic devices useful for establishing in situ conformal contact with a tissue in a biological environment. The invention includes implantable electronic devices and devices administered to the surfaces(s) of a target tissue, for example, for obtaining electrophysiology data from a tissue such as cardiac, brain tissue or skin.

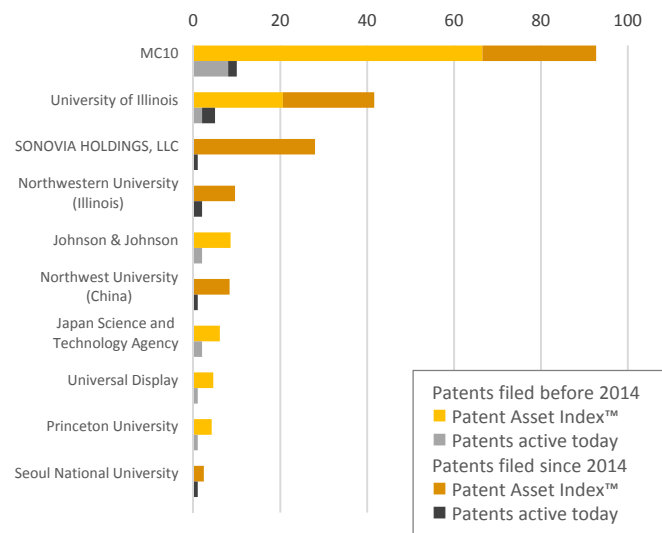
Value class	Top 5%
<b>Competitive Impact™ (CI)</b>	9,4
<b>Technology Relevance™ (TR)</b>	5,3
<b>Recent Technology Relevance™</b>	10,9
<b>Ext. Technology Relevance™</b>	100%
<b>Market Coverage™ (MC)</b>	1,8
<b>Granted &amp; active</b>	JP; TW
<b>Pending</b>	EP; US
<b>Attacked</b>	-



## Prior Art (13 active cited patents - 17 total)



## Subsequent Art (31 active citing patents - 32 total)



CI	Owner	Sample title	Sample member
Everlight Electronics	Everlight Electronics	Radiation Emitter Device Having An Integral Micro-groove Lens	<a href="#">EP1169735.A1</a> et al. (1999+)
University of Illinois	University of Illinois	Method And Device For Manufacturing And Assembling Printable Semiconductor Element	<a href="#">EP1759422.A2</a> et al. (2005+)
University of Illinois	University of Illinois	Composite Patterning Devices For Soft Lithography	<a href="#">EP1742893.A2</a> et al. (2005+)
OneD Material	OneD Material	Applications Of Nano-enabled Large Area Macroelectronic Substrates Incorporating Nanowir...	<a href="#">US2004112964.A1</a> et al. (2003+)
University of Illinois	University of Illinois	Peeling Method For Producing Transferable Semiconductor Structure, Device, And Device Com...	<a href="#">EP2064734.A2</a> et al. (2007+)
University of Illinois	University of Illinois	Controlled Buckling Structures In Semiconductor Interconnects And Nanomembranes For Stretchabl...	<a href="#">US2008157235.A1</a> et al. (2007+)
University of Pennsylvania	University of Pennsylvania	Flexible And Scalable Sensor Arrays For Recording And Modulating Physiologic Activity	<a href="#">EP2265171.A1</a> et al. (2009+)
Toshiba	Toshiba	Nonvolatile Semiconductor Memory Device	<a href="#">US2009078990.A1</a> et al. (2007+)
University of Illinois	University of Illinois	A Stretchable Form Of Single Crystal Silicon For High Performance Electronics On Rubber Substrates	<a href="#">US2006286785.A1</a> et al. (2006+)
Medtronic	Medtronic	Sensor System	<a href="#">US2002120186.A1</a> et al. (2002+)

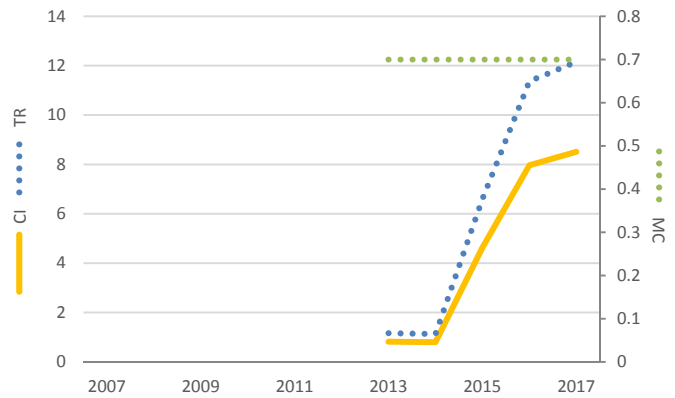
CI	Owner	Sample title	Sample member
MC10	MC10	Systems, Methods, And Devices Having Stretchable Integrated Circuitry For Sensing And Delivering Ther...	<a href="#">EP3073948.A1</a> et al. (2010+)
SONOVIA HOLDINGS, LLC	SONOVIA HOLDINGS, LLC	Light And Ultrasonic Transducer Device For Skin Therapy	<a href="#">EP2968883.A1</a> et al. (2014+)
University of Illinois	University of Illinois	Peeling Method For Producing Transferable Semiconductor Structure, Device, And Device Com...	<a href="#">EP2064734.A2</a> et al. (2007+)
MC10	MC10	Conformal Electronics Including Nested Serpentine Interconnects	<a href="#">EP2997627.A2</a> et al. (2014+)
MC10	MC10	Electronics For Detection Of A Condition Of Tissue	<a href="#">EP2786131.A1</a> et al. (2012+)
MC10	MC10	Method And System For Interacting With An Environment	<a href="#">US2016228640.A1</a> et al. (2016+)
University of Illinois	University of Illinois	Transient Electronic Devices Comprising Inorganic Or Hybrid Inorganic And Organic Substrates And Encap...	<a href="#">EP2984910.A1</a> et al. (2014+)
University of Illinois, Northwestern University (China), Northwestern University (Illinois)	University of Illinois, Northwestern University (China), Northwestern University (Illinois)	Stretchable Electronic Systems With Containment Chambers	<a href="#">EP2954551.A1</a> et al. (2014+)
MC10	MC10	Systems, Methods, And Devices Using Stretchable Or Flexible Electronics For Medical Applications	<a href="#">US2010298895.A1</a> et al. (2009+)
Universal Display	Universal Display	Flexible Lighting Devices	<a href="#">US2012286245.A1</a> et al. (2011+)



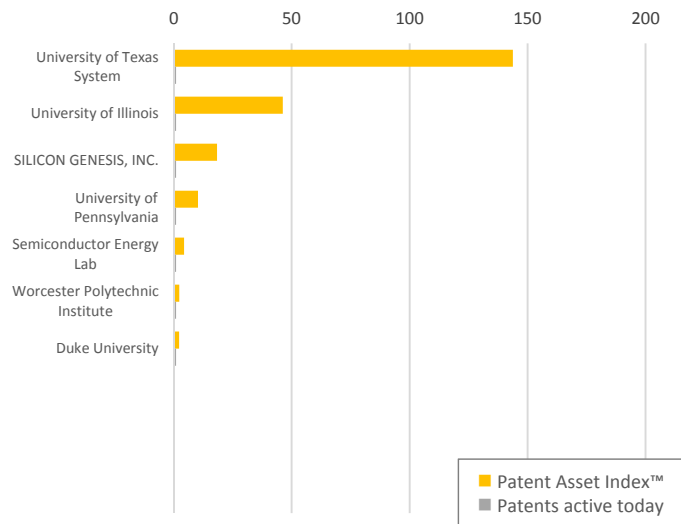
Family members: [US2013041235.A1](#)

Abstract: Provided herein are skin-mounted biomedical devices and methods of making and using biomedical devices for sensing and actuation applications. For example, flexible and/or stretchable biomedical devices are provided, including electronic devices useful for establishing conformal contact with the skin of a subject. Devices disclosed herein can comprise a plurality of sensing and/or actuating devices provided as part of a skin-mounted flexible or stretchable electronic circuit.

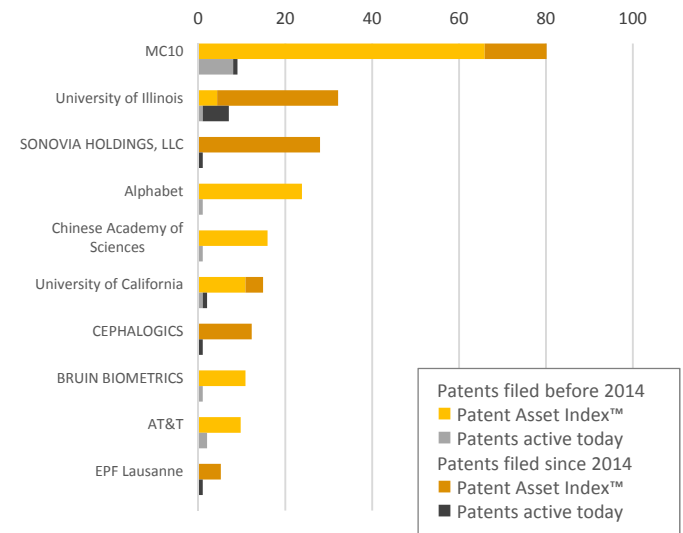
Value class	Top 5%
<b>Competitive Impact™ (CI)</b>	8,5
<b>Technology Relevance™ (TR)</b>	12,2
<b>Recent Technology Relevance™</b>	21,5
<b>Ext. Technology Relevance™</b>	78%
<b>Market Coverage™ (MC)</b>	0,7
<b>Granted &amp; active</b>	-
<b>Pending</b>	US
<b>Attacked</b>	-



**Prior Art** (7 active cited patents - 10 total)



**Subsequent Art** (45 active citing patents - 45 total)



CI	Owner	Sample title	Sample member
Orange	University of Texas System	Fabrication And Application Of Nanofiber Ribbons And Sheets And Twisted And Non-twisted Nanofib...	<a href="#">EP1814713.A2</a> et al. (2005+)
Orange	University of Illinois	Method And Device For Manufacturing And Assembling Printable Semiconductor Element	<a href="#">EP1759422.A2</a> et al. (2005+)
Orange	SILICON GENESIS, INC.	Substrate Stiffness Method And Resulting Devices For Layer Transfer Process	<a href="#">EP1894234.A2</a> et al. (2006+)
Orange	University of Pennsylvania	Flexible And Scalable Sensor Arrays For Recording And Modulating Physiologic Activity	<a href="#">EP2265171.A1</a> et al. (1985+)
Orange	Semiconductor Energy Lab	Semiconductor Device	<a href="#">US2008284710.A1</a> et al. (2008+)
Orange	Worcester Polytechnic Institute	A Multi-channel Electrophysiologic Signal Data Acquisition System On An Integrated Circuit	<a href="#">US2006173364.A1</a> et al. (2005+)
Orange	Duke University	Gan-based Nitric Oxide Sensors And Methods Of Making And Using The Same	<a href="#">US2008203431.A1</a> et al. (2007+)
Orange	Asahi Kasei	Deformation Sensitive Electroconductive Knitted Or Woven Fabric And Deformation Sensitive Electro...	<a href="#">EP0206450.A2</a> et al. (1985+)
Orange	COSMO TEC (unclear)	Transfer Substrate And Transfer Seal	<a href="#">EP0953460.A2</a> et al. (1998+)
Orange	PhiloMetric	Monitoring Platform For Wound And Ulcer Monitoring And Detection	<a href="#">US2006052678.A1</a> et al. (2005+)

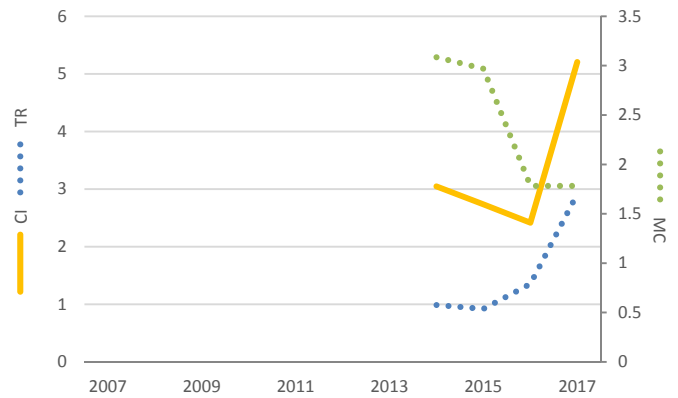
CI	Owner	Sample title	Sample member
Orange	MC10	Systems, Methods, And Devices Having Stretchable Integrated Circuitry For Sensing And Delivering Ther...	<a href="#">EP3073948.A1</a> et al. (2010+)
Orange	SONOVIA HOLDINGS, LLC	Light And Ultrasonic Transducer Device For Skin Therapy	<a href="#">EP2968883.A1</a> et al. (2014+)
Orange	Alphabet	Encapsulated Electronics In An Eye-mountable Device	<a href="#">EP2946243.A1</a> et al. (2013+)
Orange	Chinese Academy of Sciences	Application Of Electronic Skin In Voice Recognition, Voice Recognition System And Voice Recognition M...	<a href="#">EP2953012.A1</a> et al. (2013+)
Orange	MC10	Conformal Electronics Including Nested Serpentine Interconnects	<a href="#">EP2997627.A2</a> et al. (2014+)
Orange	MC10	Electronics For Detection Of A Condition Of Tissue	<a href="#">EP2786131.A1</a> et al. (2012+)
Orange	CEPHALOGICS	Optical Tomography Sensor And Related Apparatus And Methods	<a href="#">EP2967358.A2</a> et al. (2014+)
Orange	University of Illinois	Transient Electronic Devices Comprising Inorganic Or Hybrid Inorganic And Organic Substrates And Encap...	<a href="#">EP2984910.A1</a> et al. (2014+)
Orange	University of California, BRUIN BIOMETRICS	Sem Scanner Sensing Apparatus, System And Methodology For Early Detection Of Ulcers	<a href="#">EP2569618.A2</a> et al. (2011+)
Orange	AT&T	Devices And Methods For Transferring Data Through A Human Body	<a href="#">US2013142363.A1</a> et al. (2011+)



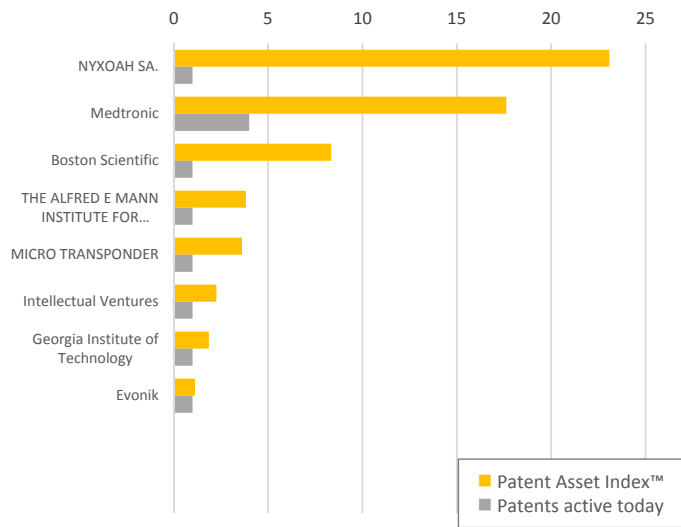
Family members: [AU2014207685.A1](#), [CA2898196.A1](#), [EP2945699.A1](#), [.A4](#), [JP2016502924.A](#), [US2014200626.A1](#), [WO2014113382.A1](#)

Abstract: The invention generally relates to an implantable, tunable, and bioresorbable medical device for nerve stimulation within a body of a patient for pain management. The medical device includes a substrate, a circuit configured to provide stimulation to a target tissue, and a material surrounding the substrate and the circuit. The system further includes a controller configured to be disposed external to the patient's body and wirelessly communicate with the medical device to provide stimulation to the target tissue when the device is implanted within the patient's body. The substrate, circuit, and encapsulation layer may each includ...

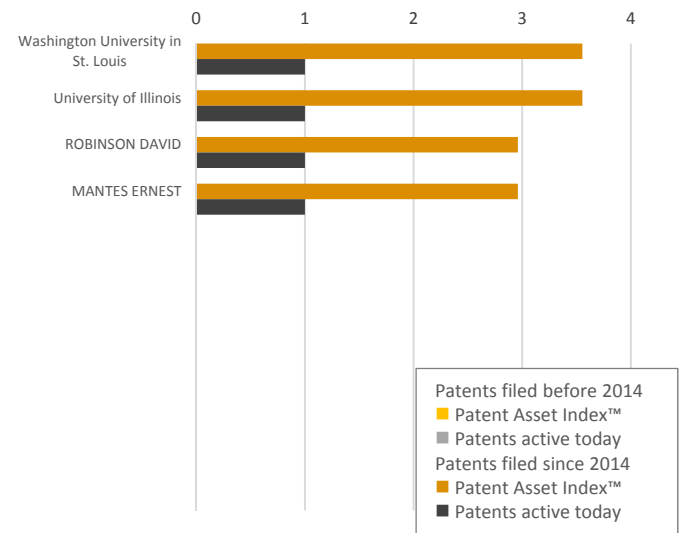
Value class	Top 5%
<b>Competitive Impact™ (CI)</b>	5,2
Technology Relevance™ (TR)	2,9
Recent Technology Relevance™	4,8
Ext. Technology Relevance™	100%
Market Coverage™ (MC)	1,8
<b>Granted &amp; active</b>	-
<b>Pending</b>	AU; CA; EP; JP; US
<b>Attacked</b>	-



**Prior Art** (11 active cited patents - 13 total)



**Subsequent Art** (2 active citing patents - 2 total)



CI	Owner	Sample title	Sample member
Orange	NYXOAH SA.	Antenna Providing Variable Communication With An Implant	<a href="#">EP2760386.A2</a> et al. (2012+)
Orange	Medtronic	Implantable Pulse Generator For Providing Functional And/Or Therapeutic Stimulation Of Mus...	<a href="#">US2005277844.A1</a> et al. (2005+)
Orange	Boston Scientific	Chronically-implanted Device For Sensing And Therapy	<a href="#">US2003158584.A1</a> et al. (2002+)
Orange	THE ALFRED E MANN INSTITUTE FOR BIOMEDICAL ENGINE	Treatments For Snoring Using Injectable Neuromuscular Stimulators	<a href="#">US2004153127.A1</a> et al. (2004+)
Orange	MICRO TRANSPONDER	Implantable Transponder Systems And Methods	<a href="#">US2009157147.A1</a> et al. (2008+)
Orange	Medtronic	Implantable Multi-electrode Device	<a href="#">EP2066396.A2</a> et al. (2007+)
Orange	Medtronic	Anchorage Devices Comprising An Active Pharmaceutical Ingredient	<a href="#">EP2637713.A1</a> et al. (2011+)
Orange	Medtronic	Resorbable Pouches For Implantable Medical Devices	<a href="#">US2008128315.A1</a> et al. (2007+)
Orange	Intellectual Ventures	Flexible Processors And Flexible Memory	<a href="#">US2014136755.A1</a> et al. (2012+)
Orange	Georgia Institute of Technology	Method For Making Electrically Conductive Three-dimensional Structures	<a href="#">US2013306356.A1</a> et al. (2007+)

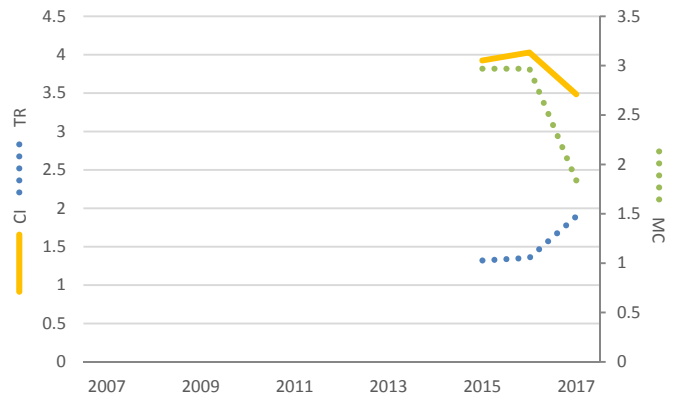
CI	Owner	Sample title	Sample member
Orange	Washington University in St. Louis, University of Illinois	Fully Implantable Soft Medical Devices For Interfacing With Biological Tissue	<a href="#">WO2017004531.A1</a> (2016+)
Orange	MANTES ERNEST, ROBINSON DAVID	An Implantable Neuro-stimulation Device	<a href="#">WO2016168485.A1</a> (2016+)
Grey			
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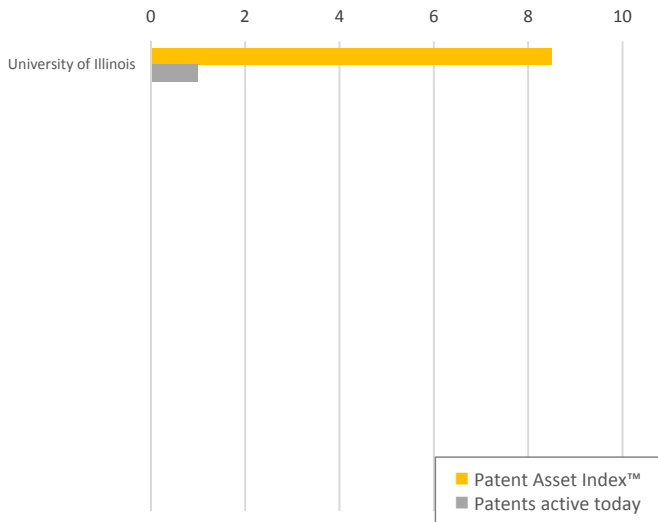
Family members: [AU2014329510.A1](#), [CA2926027.A1](#), [EP3052017.A2](#), [JP2016535649.A](#), [KR20160067152.A](#), [US2015141767.A1](#), [WO2015051085.A2](#), [A3](#)

Abstract: Provided are devices and methods capable of interfacing with biological tissues, such as organs like the heart, in real-time and using techniques which provide the ability to monitor and control complex physical, chemical, biochemical and thermal properties of the tissues as a function of time. The described devices and methods utilize micro scale sensors and actuators to spatially monitor and control a variety of physical, chemical and biological tissue parameters, such as temperature, pH, spatial position, force, pressure, electrophysiology and to spatially provide a variety of stimuli, such as heat, light, voltage and current.

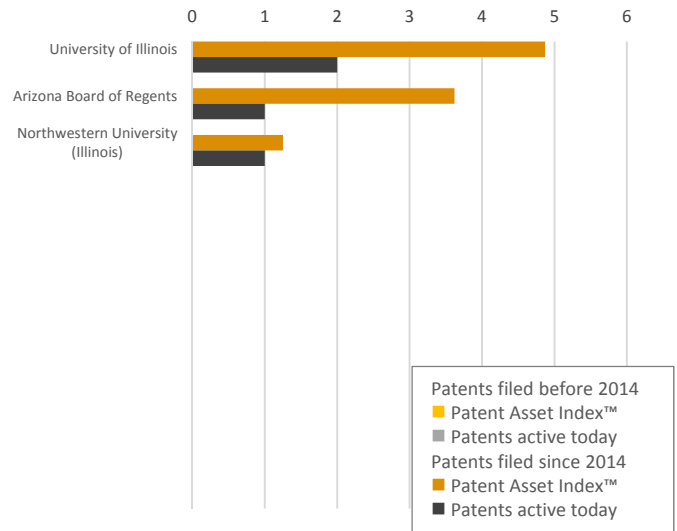
Value class	Top 10%
Competitive Impact™ (CI)	3,5
Technology Relevance™ (TR)	1,9
Recent Technology Relevance™	4,7
Ext. Technology Relevance™	0%
Market Coverage™ (MC)	1,8
Granted & active	-
Pending	AU; CA; EP; JP; KR; US
Attacked	-



**Prior Art** (1 active cited patents - 5 total)



**Subsequent Art** (2 active citing patents - 2 total)



CI	Owner	Sample title	Sample member
■	University of Illinois	Flexible And Stretchable Electronic Systems For Epidermal Electronics	<a href="#">US2013041235.A1</a> (2012+)
■	CARDIAC CRC NOMINEES PTY LTD	An Epicardial Electrode Array	<a href="#">WO9849936.A1</a> (1998+)
■	Amphenol, GE	Semiconductor Sensor With Piezoresistors And Improved Electrostatic Structures	<a href="#">US5231301.A</a> (1991+)
■	Medtronic	Cardiac Restraint With Electrode Attachment Sites	<a href="#">US2003199955.A1</a> et al. (2002+)
■	Boston Scientific	Implantable Electrode Array	<a href="#">US2007043416.A1</a> (2005+)

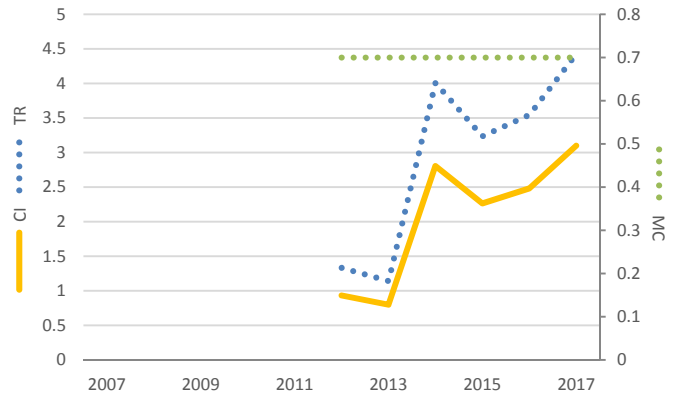
CI	Owner	Sample title	Sample member
■	Arizona Board of Regents, University of Illinois	Systems, Devices, And Methods For Contact Measurement And Modulation Of Material Propert...	<a href="#">WO2016168789.A1</a> (2016+)
■	University of Illinois, Northwestern University (Illinois)	Self-similar And Fractal Design For Stretchable Electronics	<a href="#">US2015380355.A1</a> et al. (2014+)



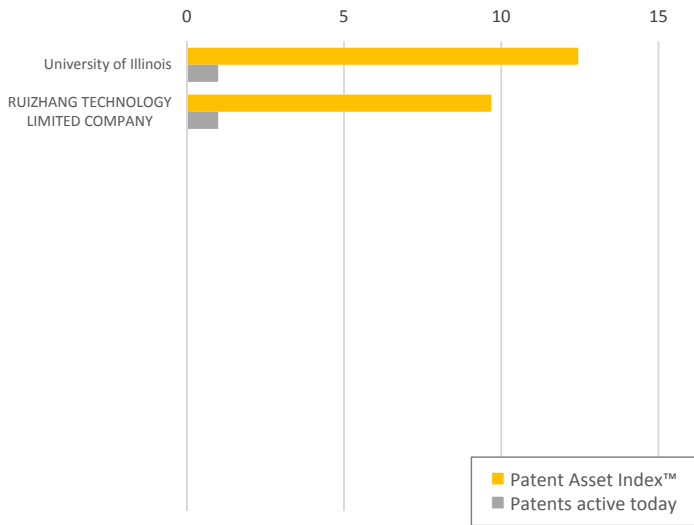
Family members: [US2012165759.A1](#)

Abstract: Described herein are flexible and stretchable LED arrays and methods utilizing flexible and stretchable LED arrays. Assembly of flexible LED arrays alongside flexible plasmonic crystals is useful for construction of fluid monitors, permitting sensitive detection of fluid refractive index and composition. Co-integration of flexible LED arrays with flexible photodetector arrays is useful for construction of flexible proximity sensors. Application of stretchable LED arrays onto flexible threads as light emitting sutures provides novel means for performing radiation therapy on wounds.

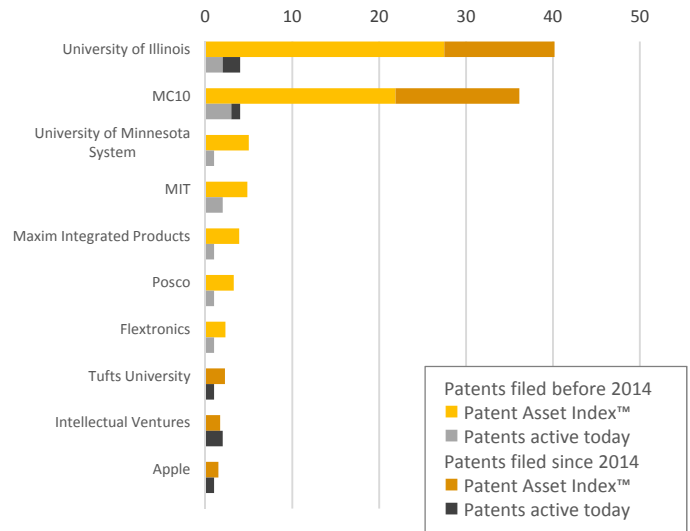
Value class	Top 10%
Competitive Impact™ (CI)	3,1
Technology Relevance™ (TR)	4,4
Recent Technology Relevance™	10,0
Ext. Technology Relevance™	86%
Market Coverage™ (MC)	0,7
Granted & active	-
Pending	US
Attacked	-



Prior Art (2 active cited patents - 5 total)



Subsequent Art (22 active citing patents - 22 total)



CI Owner	Sample title	Sample member
University of Illinois	Controlled Buckling Structures In Semiconductor Interconnects And Nanomembranes For Stretchabl...	<a href="#">US2008157235.A1</a> et al. (2007+)
RUIZHANG TECHNOLOGY LIMITED COMPANY	Rfid Tags And Processes For Producing Rfid Tags	<a href="#">US2004188531.A1</a> et al. (2004+)
Purdue Pharma	Flexible And Adjustable Grid For Medical Therapy	<a href="#">EP1011809.A1</a> et al. (1997+)
Angiotech Pharma	Compositions And Methods For Treating Disease Utilizing A Combination Of Radioactive Therapy An...	<a href="#">EP1235598.A2</a> et al. (2000+)
Cardinal Health	Radioprotective Compound Coating For Medical Devices	<a href="#">EP1568387.A2</a> et al. (2004+)

CI Owner	Sample title	Sample member
University of Illinois	Implantable Biomedical Devices On Bioresorbable Substrates	<a href="#">EP2547258.A1</a> et al. (2010+)
MC10	Conformal Electronics Including Nested Serpentine Interconnects	<a href="#">EP2997627.A2</a> et al. (2014+)
MC10	Embedding Thin Chips In Polymer	<a href="#">EP2907159.A1</a> et al. (2013+)
University of Illinois	Transient Electronic Devices Comprising Inorganic Or Hybrid Inorganic And Organic Substrates And Encap...	<a href="#">EP2984910.A1</a> et al. (2014+)
MC10	Systems, Methods, And Devices Using Stretchable Or Flexible Electronics For Medical Applications	<a href="#">US2010298895.A1</a> et al. (2009+)
University of Minnesota System	Replication Of Patterned Thin-film Structures For Use In Plasmonics And Metamaterials	<a href="#">US2012161600.A1</a> et al. (2009+)
University of Illinois	Arrays Of Ultrathin Silicon Solar Microcells	<a href="#">US2011277813.A1</a> et al. (2009+)
MC10	Extremely Stretchable Electronics	<a href="#">US2010116526.A1</a> et al. (2009+)
Maxim Integrated Products	Proximity Sensor Device	<a href="#">US8604436.B1</a> et al. (2011+)
Posco	Method Of Manufacturing Flexible Electronic Device, Flexible Electronic Device And Flexible Substrate Us...	<a href="#">EP2624326.A2</a> et al. (2011+)