

# Green IT and Regenerative Bio-Medical Convergence (GIRMC) Research Center

## Keywords

Green IT, Regenerative Medicine, Tissue Engineering, Medicinal Iontophoresis

## Chief



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Electronics  
Convergence  
Engineering

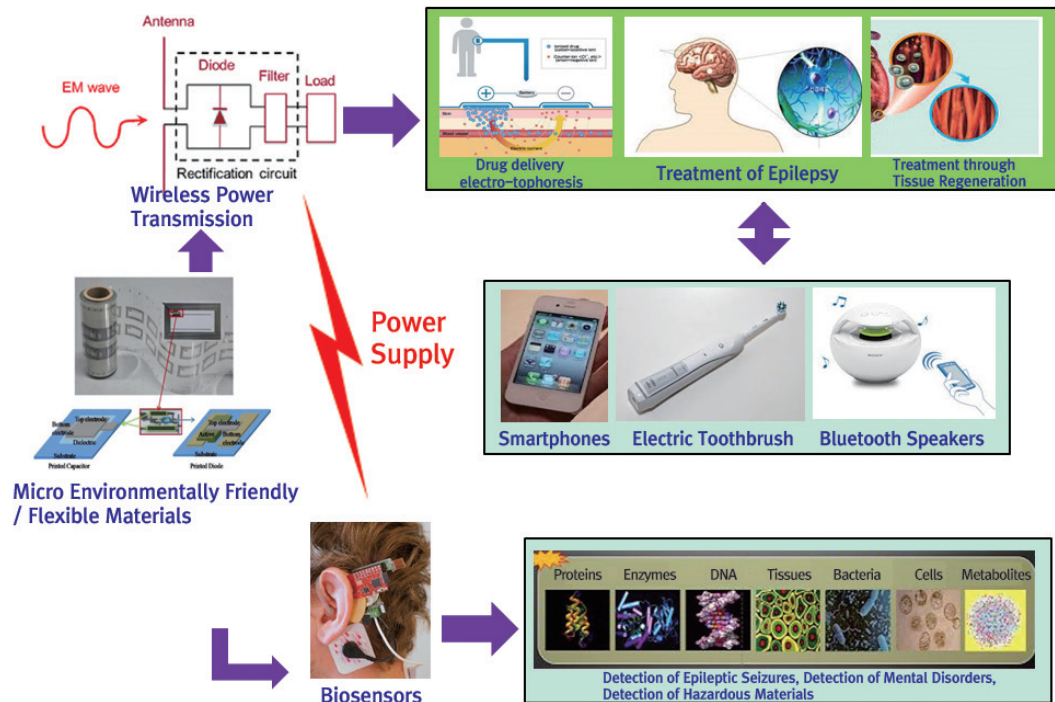
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## Members

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Associate Professor	Electronics Engineering	Lee, Jung-woo	Biosensors and Ultrasonic Therapy	jwlee@kw.ac.kr

## Current Projects

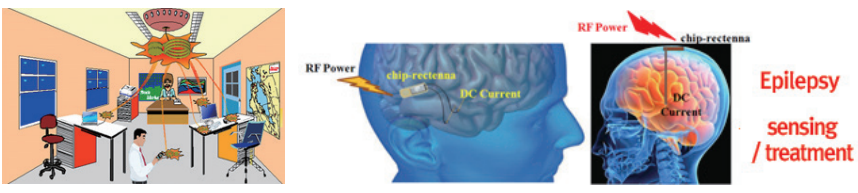
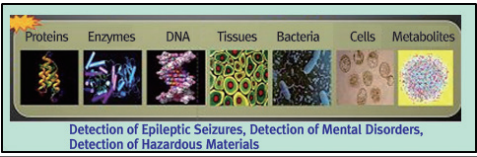
- Collection of Tissue Information by using Environmentally Friendly Wireless Power Transmission Technology and Design of Sensors and Components for Biotherapies
- Design of Electronic Components for Medicinal Iontophoresis employing Environmentally Friendly Electric Signals
- Design of Portable Micro Components and Sensors enabling the (Mobile) Application of Biotherapies
- Operation of Microelectronics Components via Wireless Power Transmission Technology



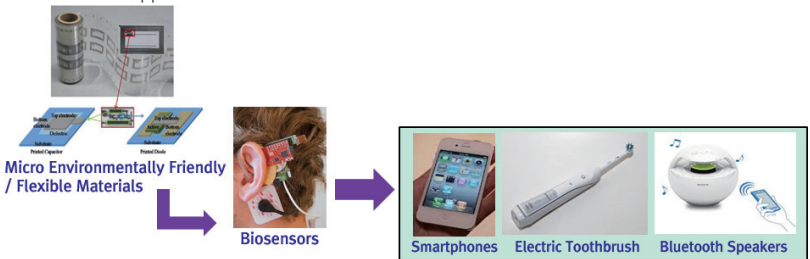


## Overview of Developed Technology

### Definition of Technology (Title of Technology) Medical Treatment of Human Diseases by using Wireless Power Transmission Technology

Stage of Technological Development	Technological Development / Pilot Production
Principles of the Technology	<ul style="list-style-type: none"> <li>■ Operation of Therapeutic Electronic Components Charged through Wireless Power Transmission Technology</li> <li>■ Medical Treatment of Human Diseases by using Electric Stimulation generated by Electric Signals from Wireless Power Transmission Systems</li> <li>■ Development of Wearable Elements capable of Detecting and Treating Human Diseases through Wireless Power Transmission Technology</li> </ul>   <p>Detection of Epileptic Seizures, Detection of Mental Disorders, Detection of Hazardous Materials</p>
Applications	Treatment of Epilepsy, Electric Stimulation Neuro-Therapies
Keywords	Wireless Power Transmission, Electric Stimulus, Wireless Charge, Detection and Treatment of Human Diseases, Wearable

### Definition of Technology (Title of Technology) Embodiment of Micro-Flexible Wireless Power Transmission Element

Stage of Technological Development	Technological Development / Pilot Production
Principles of the Technology	<ul style="list-style-type: none"> <li>■ Development of Wearable, Micro-Flexible Wireless Power Transmission Component</li> <li>■ Development of Non-hazardous, Environmentally Friendly Wireless Power Transmission Element enabling Human Body to be Free From Electromagnetic Wave</li> <li>■ Lower and Wireless Power Transmission Technology contributing to Reduced Environmental Pollution and Carbon Dioxide Emission</li> <li>■ Application of Wireless Power Transmission Technology to Bio- or Cultural Contents Industries and Wearable Electronic Appliances</li> </ul> 
Applications	Portable/Wearable Electronic Appliances, Bio-Components, Components applicable to Cultural Contents
Keywords	Environmentally Friendly Wearable Components/Elements, Low Carbon Emission, Portable Electronic Appliances, Bio-Elements

## Patents

- Multi- and Broadband Antenna Structures for Repeater Systems in Base Stations, 10-1615751, Apr. 20, 2016
- A Band Pass Filter having Resonators using MNZ Metamaterials, 10-1606179, Mar. 18, 2016
- A Magnetic Resonant Wireless Power Transmission Antenna for Wireless Charging of Multiband Mobile Appliances, 10-1584800, Jan. 17, 2016
- CPW Serial Resonator using Phase Compensation Method, 10-1573478, Nov. 25, 2015
- Structures of the Dual Mode NFC and WPT Antennas using Switching Technology, 10-1505456, Mar. 18, 2015
- An NFC Antenna covered with Metal Cover for Mobile Telecommunication Equipment, 10-1485569, Jan. 16, 2015
- A Small Broadband MIMO Antenna for Mobile Telecommunication Repeaters or Indoor Base Stations, 10-1484034, Jan. 13, 2015

## Publications

- A Symmetric Coupled Line Equivalent Circuit Model for Asymmetric Coupled Lines, 2016, International Journal of RF and Microwave Computer-Aided Engineering
- Automated Residential Demand Response Based on Advanced Metering Infrastructure Network, 2016, International Journal of Distributed Sensor Networks
- A Proximity-Fed Antenna for Dual-Band GPS Receiver, 2016, Progress In Electromagnetics Research C
- A Cavity-Backed Traveling Wave Antenna for Tri-Band GPS Applications, 2016, IEEE ANTENNAS AND WIRELESS PROPAGATION LETTERS
- Cell deformation by single beam acoustic trapping: a promising tool for measurements of cell mechanics, 2016, Scientific Reports
- COMPACT LOW NOISE AMPLIFIER WITH HIGH STABLE GAIN USING DISTRIBUTED CRLH METAMATERIAL, 2016, Microwave and Optical Technology Letters
- Probability of Packet Loss in Energy Harvesting Nodes With Cognitive Radio Capabilities, 2016, IEEE Communications Letters