Microwave Heating for Blood Perfusion Measurement

ID# 2012-3906

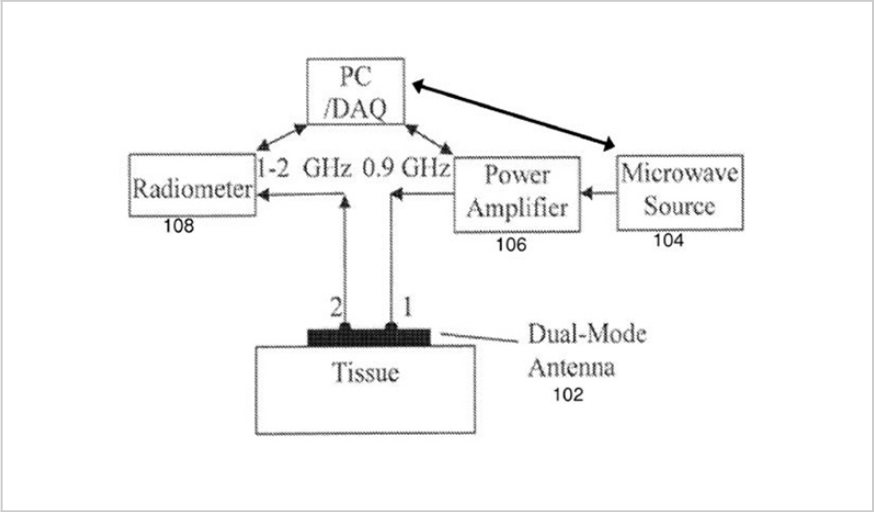

Diagram for microwave heating system

Technology Summary

This technology utilizes combined microwave heating and radiometry for blood perfusion measurement. The device heats the skin using microwave heating and monitors the temperature decay using microwave radiometric sensing. The rate of temperature decay can then be correlated with the blood perfusion rate. This method would be completely noninvasive and tetherless, while the rate is evaluated through interrogation by microwave methods within certain depth of the tissue, rather than just the surface of the skin. Covered by US Patent 9,250,139.

Application & Market Utility

Blood perfusion knowledge is necessary for disease diagnostics, drug delivery, cancer treatment, and plastic surgery. Currently, blood perfusion is measured by direct heating of the skin surface by a heat source and recording the temperature by the sensor. This technique results in large error due to imperfect contact between sensor and skin surface. Other invasive methods use sensor placement in the tissue, but these cause patient discomfort, tissue trauma, and local infections. Therefore, a safe and reliable technique for measuring blood perfusion is required.

Next Steps

Seeking research collaboration and licensing opportunities.

TECHNOLOGY READINESS LEVEL 4-7

Seeking

Investment | Licensing | Research

Keywords

- blood perfusion
- microwave heating
- radiometric sensing

Researchers

Mohammad-Reza Tofighi
Professor of Electrical Engineering
Online Bio

Originating College
College of Engineering

Office of Technology Management Contact
Martinez, Alison