

The Office of Technology Management

UNIVERSITY OF TEXAS  ARLINGTON

Soil Moisture Sensor

Tech ID: UTA 16-52

INVENTOR: Jung-Chih Chiao

TECHNOLOGY NEED

In most soil-related applications, it is very essential to determine the soil water content present. For instance, in the field of agriculture, determining the soil moisture content is very vital for assessing the profitability, viability and moisture demands for farming operations. Also, in fields of environmental studies, the presence of energy fluxes at the atmospheric interface or land surface and water exchange processes are highly impacted by surface soil moisture. Hence precise measurement of temporal and spatial variations of soil moisture is vital. However, there exist technologies capable of providing soil moisture data at single points of contact without the ability to assess the soil accurately and reliably.

INVENTION DESCRIPTION/SOLUTION

Researchers at UT Arlington have developed a low-cost soil moisture sensor that utilizes radio frequency (RF) energy to detect moisture inside the soil. A technique for dielectric spectroscopy utilizing self-resonance of a solenoid based sensor was developed. The sensor is designed to detect self-resonance frequencies and reflection coefficients of moisture in a soil sample, which reflect the overall condition of the soil instead of a single contact point. Pattern recognition algorithms and classification methods were developed to characterize moisture contents with different soil types. A prototype has been developed and tested for in situ monitoring. The prototype, without battery, is capable to be interested with remote sensing technologies which enable a means to map the soil moisture content in a large area.

APPLICATIONS

- Bioremediation
- Wastewater reclamation
- Landfill management
- Irrigation management
- Crop yield forecasting
- Issuing early warning of droughts

KEY BENEFITS

- Fast assessment
- Low cost without consumables

STAGE OF DEVELOPMENT

Prototype

Extensive tests done

INTELLECTUAL PROPERTY STATUS

PCT Application



About the Inventors:
Jung-Chih Chiao

Contact information
For licensing, please contact
Koffi Selom Egbeto
koffi.egbeto@uta.edu
otm@uta.edu
P: 817.272.1132

Our mailing Address:
The Office of Technology
Management
701 S Nedderman drive,
Suite 350, Arlington, TX
76019

Connect with us:

