



## **Resonator-based measurements of humidity of soils**

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This paper presents a method to measure the humidity of soil samples, which is based on a single-mode high-quality resonator operating in the microwave band. In the described method, a soil sample is placed within a quartz tube placed inside a cylindrical resonator along its axis. The openings in the top and the bottom sides of the resonator make it easy to insert the quartz sample holder (and the sample) inside the resonator, and rapidly replace samples when necessary or even shift the tube while performing measurements. The humidity of a sample under test is recorded indirectly as the Q-factor of the cavity. With properly selected resonant mode excited within the resonator even samples of high water contents can be measured with the proposed set-up without problems with overdamping of the resonance.

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