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(54) **SENSOR, MEASURING DEVICE, AND MEASURING METHOD FOR MEASURING THE PERMITTIVITY OF A SAMPLE USING A HELIX CONDUCTOR**

(57) A sensor for measuring a sample in a measuring cell comprising a helix conductor (110) located at the measuring cell (108) elsewhere than in the space enclosed by the measuring cell (108), the shell structure (112) of the measuring cell (108) being made of an electrically non-conductive material. The measuring cell (108) and at least part of the helix conductor (110) are placeable inside a chamber (104). The chamber (104) comprises a shell structure (106) made of an electrically conductive material. The coupling of both ends (114, 116) of the helix conductor (110) to the shell structure (106) of the chamber (104) is the same. A radio-frequency signal input element (102) couples a radio-frequency signal to the chamber (104) for the purpose of forming at least one helix resonance to the helix conductor (110). A radio-frequency signal output element (124) is responsive to at least one helix resonance of the helix conductor (110) and transmits a radio-frequency signal for measurement. A device for measuring a sample in a measuring cell comprises said sensor, a radio-frequency signal

source (100), and a measuring and control part (122). The radio-frequency signal source (100) produces a radio-frequency signal to the input element (102). The measuring and control part (122) measures at least one property of a sample (130) on the basis of at least one resonance frequency.

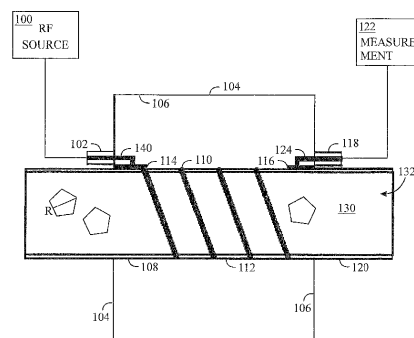


FIG. 1