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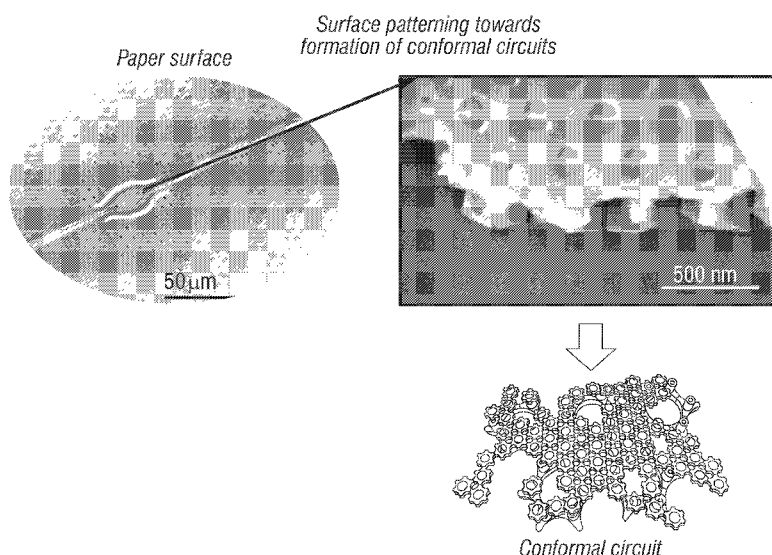


FIG. 1

(57) Abstract: The claimed invention is an apparatus and method for performing impedance spectroscopy with a handheld measuring device. Conformal analyte sensor circuits comprising a porous nanotextured substrate and a conductive material situated on the top surface of the solid substrate in a circuit design may be used alone or in combination with a handheld potentiometer. Also disclosed are methods of detecting and/or quantifying target analytes in a sample using a handheld measuring device.