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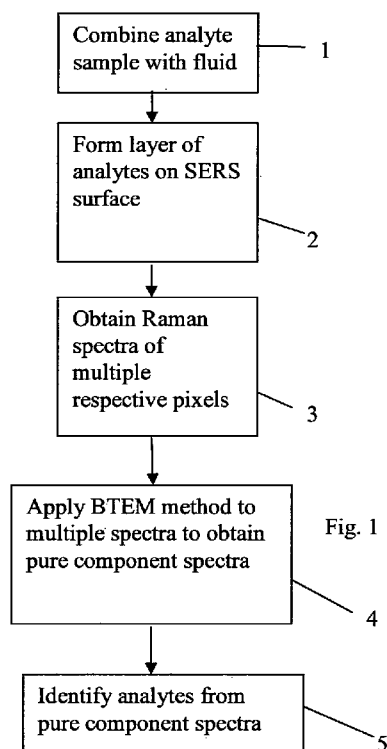
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- (54) **Title:** METHOD AND APPARATUS FOR ANALYZING A LIQUID SAMPLE BY RAMAN SPECTROSCOPY



(57) **Abstract:** A liquid sample containing multiple analytes is used to produce a layer on a SERS surface of an SERS substrate. Raman spectra are collected from the different locations. The Raman spectra for different locations have different ratios of signal components from the multiple respective analytes, for example because the analytes are present in different proportions at the different locations, or because the analytes interact with the SERS surface in different ways at the different locations. A self-modeling curve resolution technique such as BTEM is used to extract from the collected Raman spectra multiple pure component spectra, corresponding to the respective analyte components. The pure component spectra can be used to identify the analytes. One way of producing the inhomogeneous layer is by evaporating the liquid sample. Another is by arranging for the surface of the SERS substrate to be inhomogeneous, so that an inhomogeneous layer of adsorbed analytes is formed and/or such that the SERS effect itself is inhomogeneous.



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