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GYTI 2017

CONTENTS:

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Low Cost and Field-Portable Smartphone Platform Water Testing Kit for Detection and Analysis of Contaminants in Drinking Water

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Guide :
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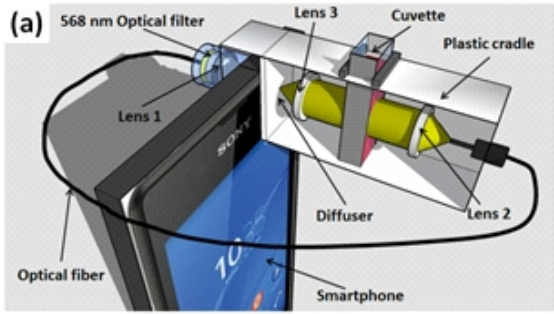
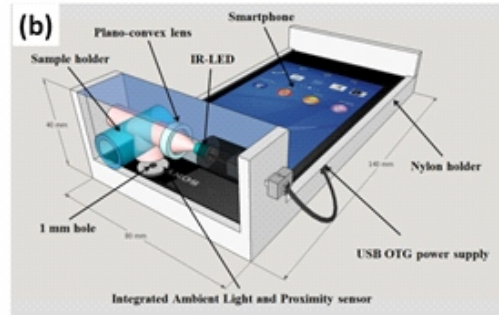
As per the eleventh five-year plan document of India (2007-12), there are about 2.17 lakh regions in the country with more than half affected with excess iron, followed by fluoride, salinity, nitrate and arsenic in drinking water. Majority of such cases are contributed due to unclean water supply and poor sanitation. Most of the detection methods for water contamination are confined to laboratory due to its time-consuming measurement procedure and the use of bulky instruments such as spectrophotometer in colorimetric tests. Water samples from these regions are usually sent to the central water quality monitoring laboratory and the process of estimating fluoride concentration is an in-efficient and time consuming process.

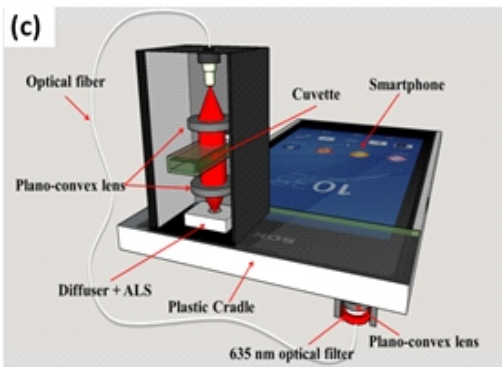
In the present invention, the smartphone is converted into a laboratory grade low cost, robust and field portable water quality monitoring kit to detect and quantify water contaminants such as fluoride, turbidity and salinity. Using the same kit, all the colour based water quality monitoring can be possible. The illumination sensor or ambient light sensor (ALS) of the smartphone is used as a detector and its optical led flash is used as a light source to convert the smartphone in to a photometric sensor for its utilisation in water quality monitoring.

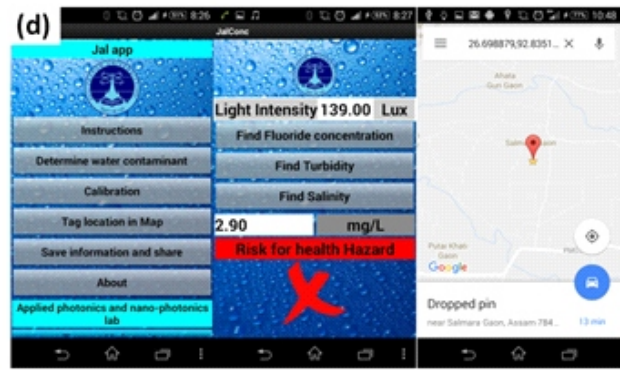
Thus, a simple and user friendly, low cost android platform based application for real time detection and analysis is developed. The visual gesture indication is incorporated in the application so that people without any proper scientific knowledge can easily handle the kit. Using the same application real time reporting and data sharing is made possible using the existing communication facility of the phone.





(a) Schematic of smartphone based Fluoride sensor; (b) Schematic of water turbidity sensor (c) Schematic of salinity sensor





Prior Art Search:

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