

Detection of impurities in the sub-ppb range

Reference No: B69177

CHALLENGE

The measurement of impurities at low concentrations in liquids is a important issue in many different fields. Among others, it can be especially relevant for in environmental analysis. Additionally, the detection of impurities in solutions is very important, for example, in the semiconductor industry. Here minute impurities in the precursor solutions can lead to major failures during production and processing. Despite the need for a sensitive and reliable method for the detection of impurities, the in-situ measurement of impurities at very low concentration is still challenging. Conventional methods, such as the optical measurement of scattered light, are not sufficiently sensitive. Other methods for the detections of impurities, such as ion chromatography, are generally more complex to apply and can not be carried out in situ.

INNOVATION

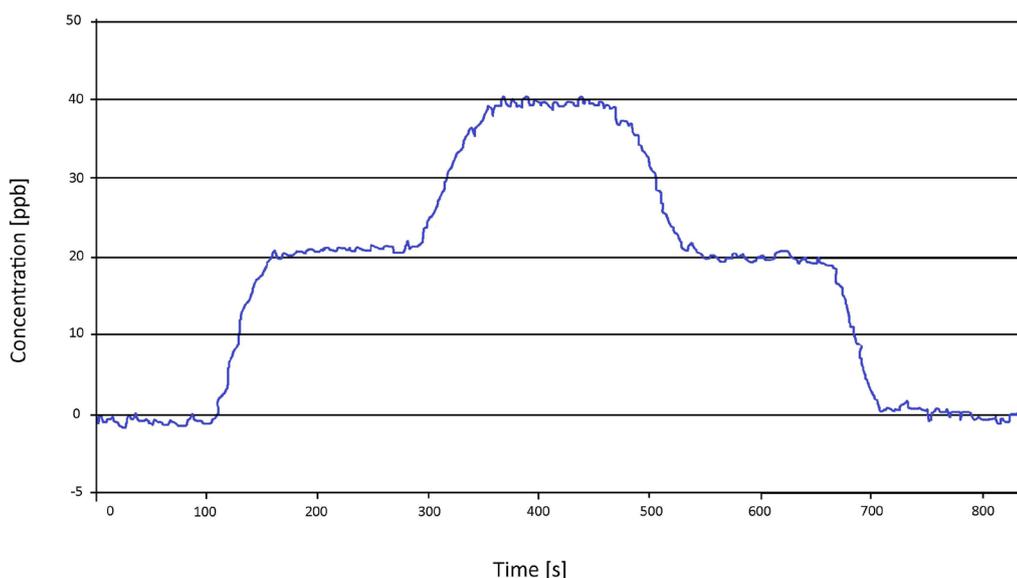
The present invention describes a sensor system which allows to analyze **impurities dissolved in a liquid down to the sub-ppb concentration range**. The measurement is based on an **optical method**, in which **the measurement of the impurities concentration is carried out within an extremely long optical path**, which is built inside the sensor unit. The design of the sensor unit allows for a **strong miniaturization** allowing for its use, for instance, **in lab-on-a-chip devices**. This detection system has been shown to be particularly efficient for the detection of metal complexes in water solution.

COMMERCIAL OPPORTUNITIES

The invention can be used in all fields in which a high detection sensitivity for impurities in a liquid is needed. In particular, it can be used for **enviromental analysis**, und **process monitoring in the semi-conductor industry**. The sensor system can be efficiently miniaturized, allowing for its use in **lab-on-a-chip devices**.

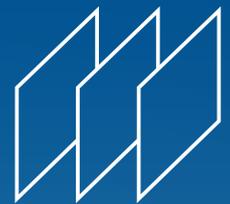
DEVELOPMENT STATUS

The product is available for the market.



REFERENCE:

① EP 2 486 388 B1, CN 102713563 B, US 8,948,563 B2.



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Contact:

Dr. Tobia Mancabelli
+49 (0) 89 5480177-11
tmancabelli@baypat.de

**Bayerische
Patentallianz GmbH**
Prinzregentenstr. 52
80538 München
www.baypat.de