Method of detecting Faecal Pigments in Water using Solid-state Green Fluorescence on Metal Salts

IITM Technology Available for Licensing

Problem Statement

- **Faecal matter** (FM) contains undigested carbohydrates, bile pigments (bilirubin, **stercobilin (SB) & urobilin (UB),** dead leukocytes, proteins, fats & inorganic substances) in water.
- Faecal pigments (FPs) are the open tetrapyrroles formed by bilirubin degraded products(SB & UB), & both SB & UB pigments are considered as faecal pollution indicators of pathogens in water
- Based on **prior arts** discussion, there are a few methods discussed for detecting FPs, however the process **required elaborate & expensive techniques**.
- Hence, present Patent has addressed above issues efficiently.

Technology Category/ Market

Technology: Detecting Faecal Pigments in **water** using solid-state Green Fluorescence on Metal Salts
Industry: Waste-water treatment;
Applications: Water Treatment**;**
Market: The global water testing market is projected to reach USD **5.40B** by **2028**, at a **CAGR** of **5.57%** during (**2023-2028**).

Intellectual Property

IITM IDF Ref. 2246; Patent No: 405277

Technology

- Present patent claimed a **method for detecting Faecal Pigments (FP) in water** wherein Faecal Pigments includes **urobilin & stercobilin** in water using solid-state green fluorescence on metal salts.
- Said method comprises the steps of:

➢ First Step describes about taking **100 mg** of metal salt in the **ceramic well;**

➢ Second step describes about drop casting of **15 µL** of **100 µM FPs** on the surface of **metal salts** of first step by **step-wise addition** using a micropipette; and

➢ Third step describes about illuminating the drop casted sample from second step using a **UV torch** of **365 nm.**

Images

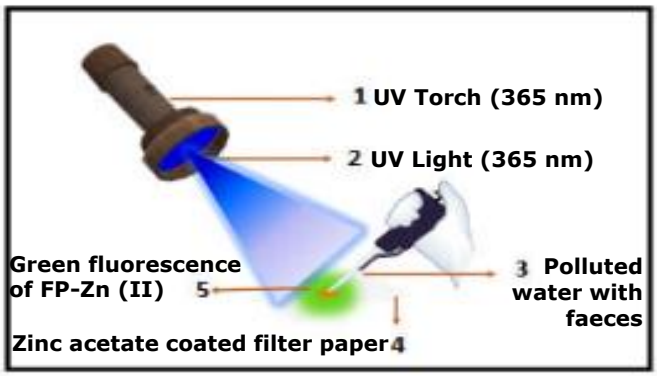

Fig.1: Illustrates schematic representation of a step-wise method for detecting FP in water samples.

Key Features / Value Proposition

Technical Perspective:
1. Proposed method is using **solid-state green fluorescence on metal salts** for detecting **FPs** in water.

2. Applicable to **cellulosic substrate based FPs detection** under **blue UV 365 nm**.

3. Method detects **FPs** in the **µM** concentration range by the paper strip, wherein said paper strip coated with zinc acetate salt.

Industrial Perspective:
1. Proposed method is **cost-effective, rapid & real-time analytical** method for **FPs analysis by naked eye**.

TRL (Technology Readiness Level)

TRL-4, Proof of Concept ready & validated

Research Lab

Prof. Ashok Kumar Mishra
Dept. of Chemistry

CONTACT US
Dr. Dara Ajay, Head
Technology Transfer Office,
IPM Cell- IC&SR, IIT Madras

IITM TTO Website:
https://ipm.icsr.in/ipm/

Email: smipm-icsr@icsrpis.iitm.ac.in
sm-marketing@imail.iitm.ac.in
Phone: +91-44-2257 9756/ 9719