

Description:

The PAHs biodetection system (*gst-lux*) have **eight advantages**: high sensitivity, low cost, rapid detection and quantization, cheaper price, simple assembly, easy to operate and no secondary pollution. To the best of our knowledge, this biosensor was **the first invention to combine luminescence** investigations to detect PAHs pollutants.

The Luminescence Means Toxin.

(The PAHs biodetection system (*gst-lux*))



Figure 1. The novel system Machine of PAHs (naphthalene) detection.

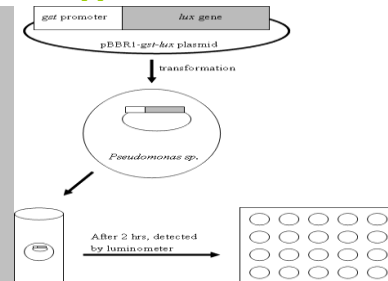


Figure 2. The development drawing of GST-luminescence detection system

Designs and Features

This patent is the new biological detection systems. The system combined the GST and luciferase gene to analyze the common poison compound- naphthalene in environment. The limitation of the naphthalene concentration by this detection system was **under 1ppm**. The total analysis time is **only within 3 hours**. To the best of our knowledge, this biosensor was the first invention to combine luminescence investigations to detect PAHs pollutants.

Innovation

1. The enzyme activities of Glutathione S- transferase (encoded by *gst* gene) were **positive related to naphthalene concentrations**.
2. We constructed the plasmid pBBR1-gst-lux, which containing *gst* promoters with *lux* gene into pBBR1 vectors by PCR.

Innovation:

3. **This patent is the new biological detection systems.** The system combined the GST and luciferase gene to analyze the common poison compound- naphthalene in environment.
4. The **limitation of the naphthalene concentration** by this detection system **was under 1ppm.**
5. The total **analysis time is only within 3 hours.**
6. To the best of our knowledge, this biosensor was **the first invention to combine luminescence** investigations to detect PAHs pollutants.

Main Advantages of Invention:

The eight advantages of this patent were:

- | | |
|-------------------------|----------------------------|
| (1)high sensitivity, | (2)low cost, |
| (3)rapid detection and, | (4)quantization, |
| (5)cheaper price | (6)simple assembly, |
| (7)easy to operate | (8)no secondary pollution. |

***The PAHs biodetection system –
The cost of naphthalene detection is around
US\$ 2 dollars and cheaper than other
detection systems.***