

### Multi Modal Imaging System for Preclinical Studies

#### IITM Technology Available for Licensing

#### Problem Statement

- This invention is the lack of a **cost-effective and versatile preclinical imaging system** capable of performing **multiple imaging modalities (Radiography, CT, Fluoroscopy, XEOL, Fluorescence)** using a single setup.
- The system that combines **low cost with high resolution**, utilizing **advanced scintillator and CMOS camera technology** to enable efficient and multi-modal imaging for preclinical studies.

#### Technology Category/Market

**Category** – Biomedical Imaging, Medical Imaging Systems

**Applications** -Bio Medical Engineering

**Industry** – Medical & Surgical

**Market** - The global medical imaging market size was valued at USD 32.3 billion in 2022 and is expected to grow at a compound annual growth rate (CAGR) of 4.8% from 2023 to 2030.

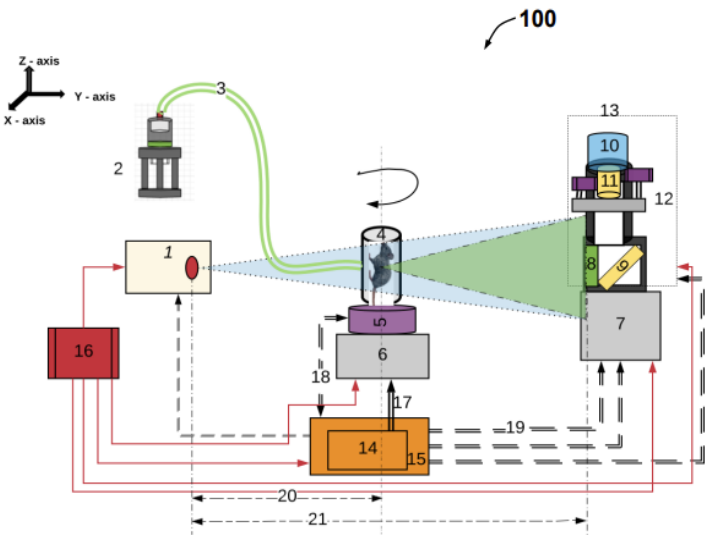


Fig.1 illustrates a table top Multi modal imaging system

#### Technology

##### Inorganic Scintillator (Cesium Iodide doped with Thallium - CsI (TI)):

Utilized as the **X-ray detector material**, it offers enhanced resolution compared to traditional phosphor screens.



##### High Frame Rate CMOS Camera:

Employed for capturing images with high-speed frame rates, facilitating real-time **dynamic imaging such as fluoroscopy**



##### Multi-Modal Imaging Setup:

The invention integrates various imaging modalities (**Radiography, CT, Fluoroscopy, XEOL, Fluorescence**) into a **single system**, eliminating the need for separate setups and costly equipment.



##### Automated Setup Transformation:

The system enables easy transformation between imaging modalities by removing the **scintillator and placing filters**, enhancing flexibility and efficiency.



##### X-ray Excited Optical Luminescence (XEOL) and Fluorescence Imaging:

By substituting the scintillator with filters, the system allows for **X-ray-excited luminescence and fluorescence imaging**.



##### Cost-Effective Design:

The combination of advanced scintillator technology and **high-resolution CMOS cameras** provides cost-effective yet versatile imaging capabilities for preclinical studies.

#### Intellectual Property

- IITM IDF Ref. 1846
- IN 201941025672

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### Key Features / Value Proposition

#### Technical Perspective

- The present invention relates generally to the field of **hybrid imaging 5 system for preclinical studies**.
- More particularly, the present invention relates to a **low cost multi modal imaging system that contains an optically coupled detector**.

#### User Perspective

- This invention provides a **cost-effective and versatile imaging solution** that enables **comprehensive preclinical studies** through **multiple modalities, higher resolution, real-time observations, and simplified experimentation**.

### Images

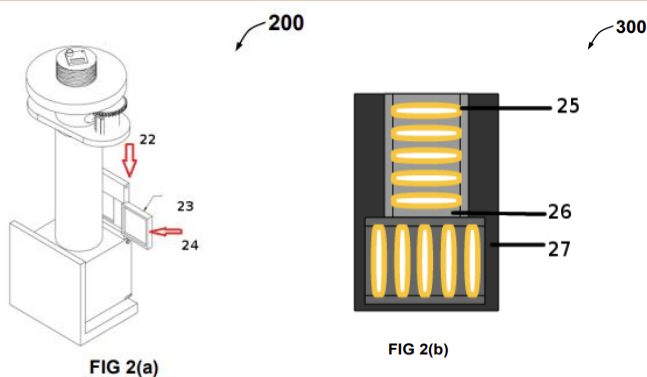


Fig.2 illustrates a side view of the Dual modality camera and 2b) illustrates a calibration phantom;

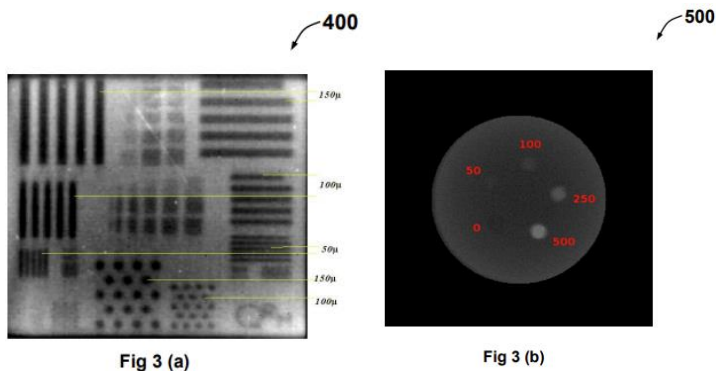


Fig 3 (a)

Fig 3 (b)

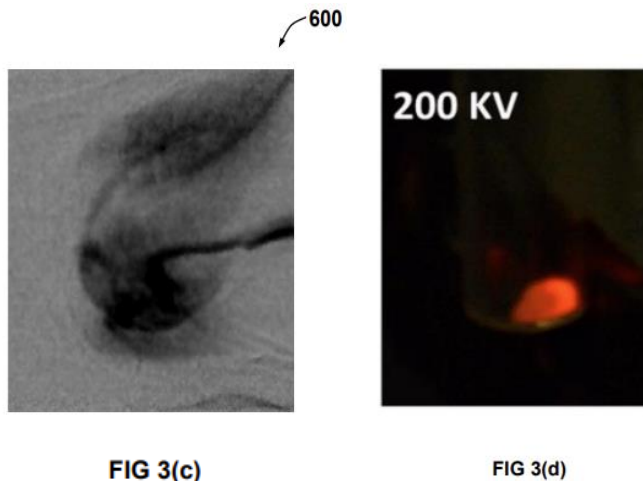


FIG 3(c)

FIG 3(d)

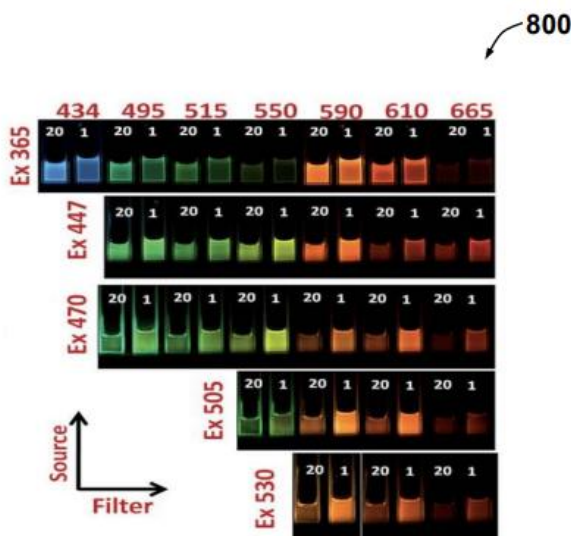


FIG 3(e)

Fig.3 illustrates the experimental results conducted for the present invention

### TRL (Technology Readiness Level)

TRL- 8, System complete and qualified

### Research Lab

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