



Industrial Consultancy & Sponsored Research (IC&SR)

A PROCESS FOR GENERATING BROADBAND WHITE LIGHT FROM POLYCRYSTALLINE YTTRIUM IRON GARNET AND A PRODUCT THEREOF IITM Technology Available for Licensing

Problem Statement

- In the prior art literature discussion, it is found that the global ecosystem is off-putting by aggravating energy-demands and consequently, the scientific and industrial interests have been concentrating at seeking after the energy-efficient light sources.
- Further, in spite of intense research in said domain, the polycrystalline inorganic bulk materials that **intrinsically emit broadband white-light upon illumination with near-UV** sources are very out of ordinary and costlier.
- The present patent invention provides solution of above discussed problem by introducing the **Yttrium Iron Garnet (YIG)** in efficient manner.

Technology Category/Market

Technology: Polycrystalline Yttrium iron garnet (YIG);

Industry: Chemical & Optoelectronics, Clean Energy;

Applications: Indoor Lighting, Color Displays, Precision spectroscopy, visible light communication;

Technology

- Patent describes a **process** for **synthesizing polycrystalline yttrium iron garnet**.
- Further said **process** describes about the **generating broadband white light** from polycrystalline yttrium iron garnet, wherein the broadband white light excited **with 370nm excitation source**, shown in figure1
- The white light emission is obtained intrinsically from the compound without extrinsic doping of any optically active ion.

Images

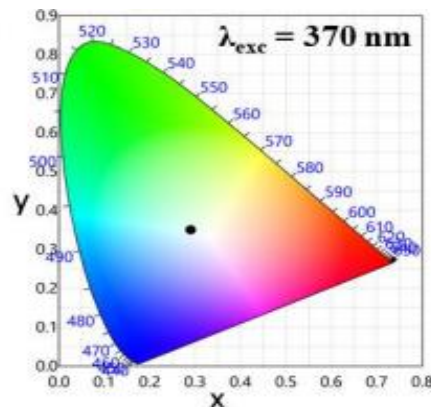


FIG. illustrates the outcome from Patented process, specifically CIE(1931) chromaticity diagram corresponding to 370nm excitation;

Key Features / Value Proposition

- ❖ **Technical Perspective:** Polycrystalline yttrium iron garnet emits **near-white light at excitation wavelength** ranging from 325 to 390nm, with **white-light emission** particularly at **370nm**.
- ❖ **Industrial Perspective:** The **color-tunability** from spectrum respective to **cyan-white-blue-green-yellow-orange-red** is achieved by varying the excitation wavelength from **280 to 600 nm**, efficiently, cost-effective manner.

Intellectual Property

IITM IDF Ref. 2113;
IN Patent No: 421760 (Granted)
PCT Application No. PCT/IN2022/050136

TRL (Technology Readiness Level)

TRL- 3, Proof of Concept ready

Research Lab

Prof. Ramachandra Rao M S
Prof. Lakshmi Ganapathi K
Dept. of Physics, IIT Madras

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