

Converting Infrared Light into Visible Light Using Lanthanide-sensitized Oxides

>> Developed by Prof. WANG Jianfang | Dept. of Physics

Aim

- To provide novel material to convert low-energy infrared photons into high-energy visible photons.

Features

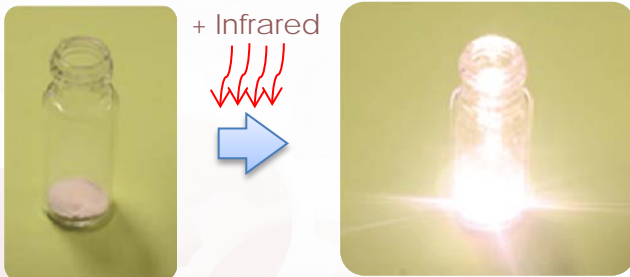
- Upconversion of oxide materials such as lanthanide-sensitized oxides

Advantages

- Power conversion efficiency (infrared to visible light): up to 16% (max 8% for existing materials)

Applications

- Assist solar cells to convert sub-semiconductor band-gap light energy into solar cell absorbable high energy photons



Related Patent

- US14/279,128

◀ Sensitized mesoporous ZrO_2 according to one embodiment of the invention. Visible light emission of Yb^{3+} -doped ZrO_2 powder in the bottle before (left) and after (right) excitation with infrared light is shown.

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