Ca' Foscari University of Venice PINK PROMOTING INNOVATION AND KNOWLEDGE

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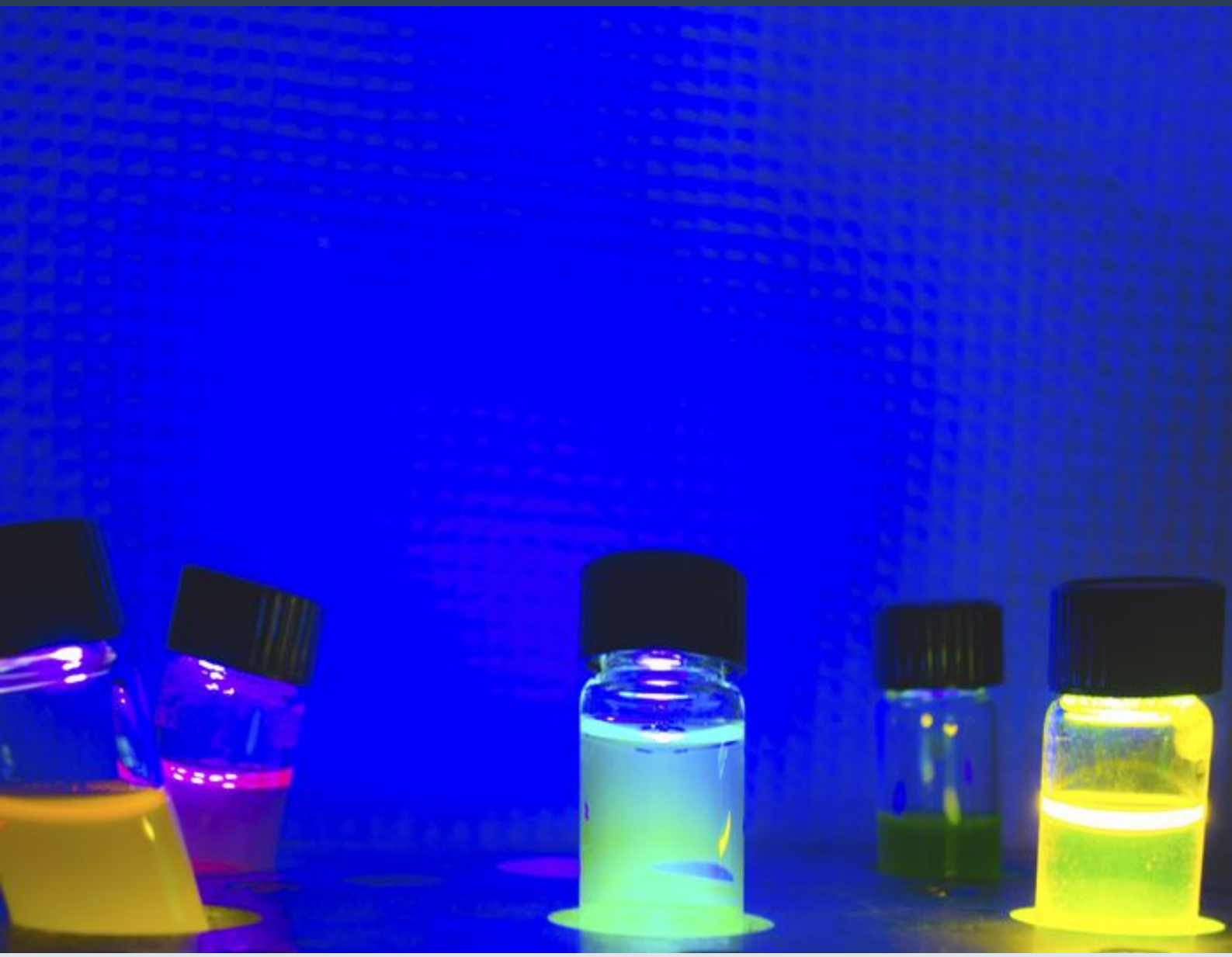
Luminescent Bismuth Silicates

Luminescent compunds (lanthanide ions dopped bismuth silicates) with optical properties showing efficient upconversion luminescence



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IP Status

Patented

Seeking

Development partner, Licensing

Background

The invention relates to luminescent compounds of lanthanide/Yb doped bismuth silicates that present a crystalline structure and are characterized by non-linear optical properties. Particularly these compounds are capable of emitting red, green and blue (RGB) up-conversion light emissions following IR or NIR excitation.

Tech Overview

The invention concerns the synthesis of a category of crystalline compounds of the family of bismuth silicates that, when opportunely doped with lanthanide ions, show efficient upconversion (UC) luminescence properties in the visible range with the possibility to easily tune the chromaticity output to customize the optical response.

Compared to the state of the art fluorides based UC materials, this class of upconverting compounds has a lower toxicity, higher thermal stability and easy compatibility with technologically advanced silicon-based devices.

These compounds have a wide range of applications, both industrial (e.g. lighting, solar energy, anti-counterfeiting) and biomedical (e.g. bio-imaging, nanomedicine).

Benefits

- Easily integrated in high temperature processes and silicon oxide based devices
- Customizable with tunable upconverting emissions
- Low toxicity
- Simple manufacturing process
- Low cost

Applications

- Anti-counterfeiting systems
- Optical thermometer for glass/ceramic substrates
- Radiopaque materials as contrast agents
- Nanosystems for dual-imaging
- IR-activated lighting
- Solar energy

Opportunity

Open to collaborative projects to further develop the technology and/or licensing.

Patents

- IT: 102015000025007