

# NEW MATERIALS & CHEMICAL PROCESSES

## Novel synthetic optimizable **hackmanite material** suitable e.g. for UV detection and luminescence

### Background:

Novel synthetic hackmanite materials have been made in University of Turku. Synthetic hackmanite material is optimizable and tunable for different purposes, for example for UV detection having also excellent luminescence and afterglow properties. Synthetic hackmanite material is non-toxic, environmentally friendly, reusable and inexpensive. It is a synthetic multipurpose material that can be further optimized and requisite features enhanced according to purpose.

### Description:

- Contains only elements that are abundant in nature and non-toxic.
- Lanthanide and heavy-metal free.
- Changes color upon exposure to UV radiation. Color can be erased and regenerated.
- White afterglow lasting up to 7 h (at 0.3 mcd/m<sup>2</sup> limit).
- Afterglow and photoluminescence can be excited also with sunlight.

### Application Areas:

- UV detection
- Luminescence/afterglow
- Possible uses: e.g. Diagnostics, UV detecting/monitoring, Lighting etc.

### Contact Information (Technology):

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The IP and technology are available for licensing from the TTO of the University of Turku (UTU TTO™).

ID: UTU601

### Novel synthetic hackmanite material

Two patent families: UV detection and Luminescence properties

Priority Applications: FI20165392; PCT/FI2016/050349

PCT Publications: WO2017194825 and WO2017194834

### Status: Technology Readiness Level (TRL) 5-6

Related scientific publications:

Norrbo, I. et al. *Adv. Funct. Mater.* **27** (2017) 1606547.

Norrbo et al. *J. Lumin.* **191** (2017) 28.

Norrbo, I. et al. *ACS Appl. Mater. Interfaces* **8** (2016) 11592.

Norrbo, I. et al. *Inorg. Chem.* **54** (2015) 7717.



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