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New photoinitiator for higher through-curing depth

A new photoinitiator for radical polymerization allows the curing by visible light in the long-wave range. Photopolymerizable compositions with this photoinitiator system achieve high reactivity, excellent curing characteristics and bleaching behaviour in combination with good storage stability. Due to the higher penetration depth, the new substances are beneficial for wide range of applications in coatings, composites and 3D printing.

BACKGROUND

Photopolymerization is a technique to cure liquid polymerizable formulations within the fraction of a second to give decorative and protective coatings. Nowadays also more advanced applications have been included such as photoresists or bulk polymers such as dental fillings or light-based 3D printing.

Up to now, there are several limits of currently used photoinitiators including low absorption in the visible range and poor through cure of pigmented or highly filled photopolymerizable formulations. Furthermore, there are several concerns regarding health issues in currently used long wavelength photoinitiators based on acylphosphine oxides like TPO based compounds. Other long wavelength photoinitiators like germanium-based compounds that are predominantly used in the dental field suffer from high price of these compounds.

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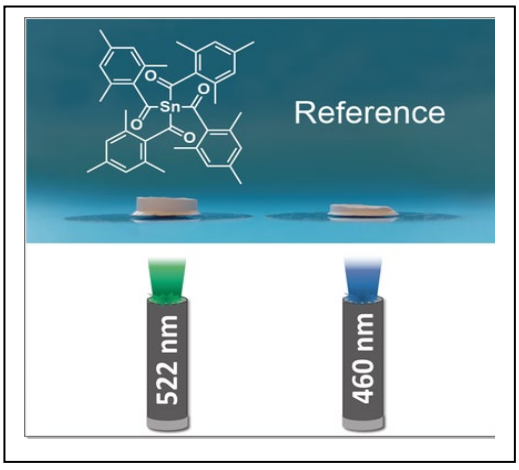
The new photoinitiator system is based on acyltin compounds. They exhibit an unusual high shift of the absorption to longer wavelength with a tail out at 550 nm. The compounds are suitable for medical uses, for example for the production of bone cements, contact lenses, intro ocular lenses or other medical implants, and non-medical uses, like nanosized microelectromechanical elements or highly pigmented or ceramic filled photopolymerizable formulations. More detailed information can be found here:



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ADVANTAGES

- High reactivity
- Absorption at wavelengths up to 550 nm
- Higher through-curing depth
- Good storage stability
- Excellent bleaching behaviour
- Low cytotoxicity

REFERENCE:
M038/16

APPLICATIONS:
- Coatings
- Composites
- 3D Printing
- Printing ink

DEVELOPMENT STATUS:
TRL 4

KEYWORDS:
visible light photoinitiator, highly filled photopolymers, radical photopolymerization

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OPTIONS:
R&D co-operation
License agreement

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