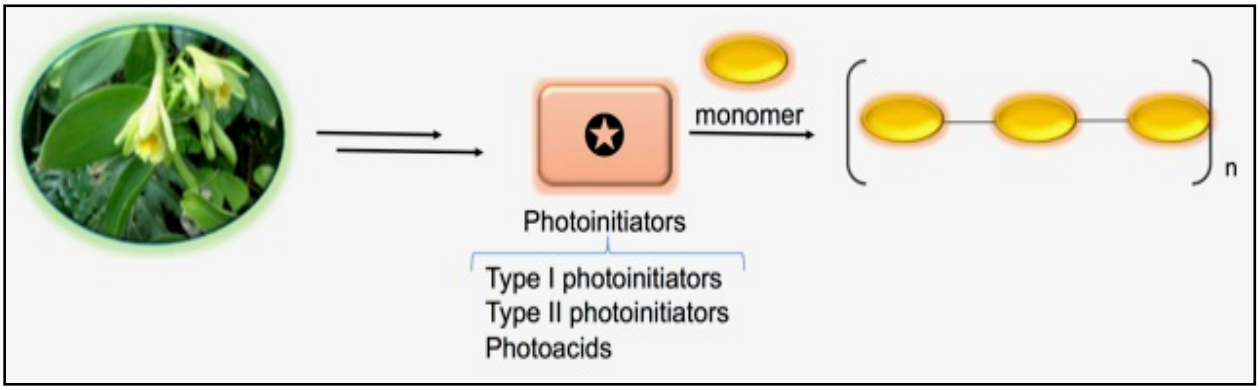
PHOTOINITIATORS THAT TRIGGER EXTREMELY RAPID AND EFFICIENT POLYMER SYNTHESIS USING UV OR VISIBLE LIGHT (RFT-530)

Invention Summary:

NDSU researchers have developed a range of Type I, Type II, and acidic photoinitiators, which provide polymerization of polyacrylate with good efficiency at low concentrations. The synthesis of photoinitiators is efficient using routine chemistry, and their structures are easily manipulated to tune for low energy (including visible) light wavelengths. These photoinitiators are each triggered by a very narrow and easily defined wavelength, making timing of polymerization easy to control (and avoiding inadvertent triggering of the reaction). The photoinitiators may be produced from either bio-based or petroleum-based starting materials, including such readily available materials as vanillin.



Benefits:

- A wide range of photoinitiators can be manufactured, providing many options to initiate polymerization under desired wavelengths of UV and visible light – this ability to select photoinitiator and wavelength enables tuning of properties of resulting polymers
- May be produced from a variety of bio-based compounds, with vanillin being a good example, and which are only needed in small quantities due to the extremely efficient reaction
- Polymerization is efficient at ambient temperature
- Affords polymerization at wavelengths up to 450 nm

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Patents:

This technology is the subject of Issued US Patent No. 10919866 and is available for licensing/partnering opportunities.

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