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## Bioinspired Visible Light Photoinitiators

Tech ID: 34629 / UC Case 2025-834-0

### BRIEF DESCRIPTION

A novel class of bioinspired photo-initiators enabling visible light-driven polymer gelation that improves cell-biomaterial compatibility across thicker tissues.

### FULL DESCRIPTION

This ingenious technology introduces bioinspired photo-initiators functionalized with amino acids for gelation of natural and synthetic polymers under low-energy visible light (500-700 nm), instead of harmful UV light. By overcoming issues such as heat generation, poor light penetration, and biological toxicity associated with UV gelation, this innovation ensures gelation even across thick tissues. The resulting polymers have tunable polymerization kinetics and along with nano- to microscale features on polymer scaffolds. Extensive testing has validated the hydrogels' biocompatibility, viscoelastic properties, and effective gelation in 3D, thus making them highly suitable for tissue regeneration, storage, and sensing applications.

### SUGGESTED USES

- » Biomedical tissue regeneration and engineering
- » 3D bioprinting and scaffold fabrication
- » Storage and sensing materials development
- » Pharmaceutical and cosmetic formulations requiring safe polymerization

### ADVANTAGES

- » Utilizes low-energy visible light, reducing heat and toxicity
- » Improved light penetration in biological tissues enabling deeper gelation
- » Water solubility and tunability through amino acid functionalization
- » Enables in situ polymerization across thick tissues, minimizing invasive procedures
- » Biomolecule-functionalization allows sequence tuning of polymer properties
- » Supports nano- to microscale feature fabrication in polymer scaffolds

### PATENT STATUS

Patent Pending

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### OTHER INFORMATION

### CATEGORIZED AS

- » **Materials & Chemicals**
  - » Biological
  - » Chemicals
  - » Polymers
- » **Medical**
  - » Delivery Systems
  - » Other
  - » Research Tools
  - » Stem Cell

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2025-834-0

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