



## ADDITIVE MANUFACTURING OF METAL-INCORPORATED RESIN OBJECTS

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### The Invention

UW-Madison researchers have developed a new additive manufacturing (AM) method for generating multi-color objects. The researchers identified a photochemically-controlled metal redox system capable of distinct color changes when irradiated at certain wavelengths of light. Further, the redox system is compatible with common photoinitiated polymerization reactions, resulting in a single resin formulation capable of generating a range of colors. The resin comprises prepolymers, a metal compound, a photoredox catalyst, a polymerization initiator, and optionally, a redox agent. Color generation and polymerization are independently controlled via selective irradiation (e.g., digital masking) the resin at predetermined wavelengths. Iterative operation on a motorized build plate can be used to generate objects having unique colors and shapes.

### Key Benefits

- Enables multi-color parts from a single resin
- Reduces need of multiple vats and dyes
- Can increase production speed and simplicity of multi-color parts
- Additionally enables multiple colors within a single resin layer (or slice)

### Additional Information

#### For More Information About the Inventors

- [Andrew Boydston](#)

#### Tech Fields

- [Materials & Chemicals : Polymers](#)

For current licensing status, please contact Justin Anderson at [janderson@warf.org](mailto:janderson@warf.org) or 608-960-9853