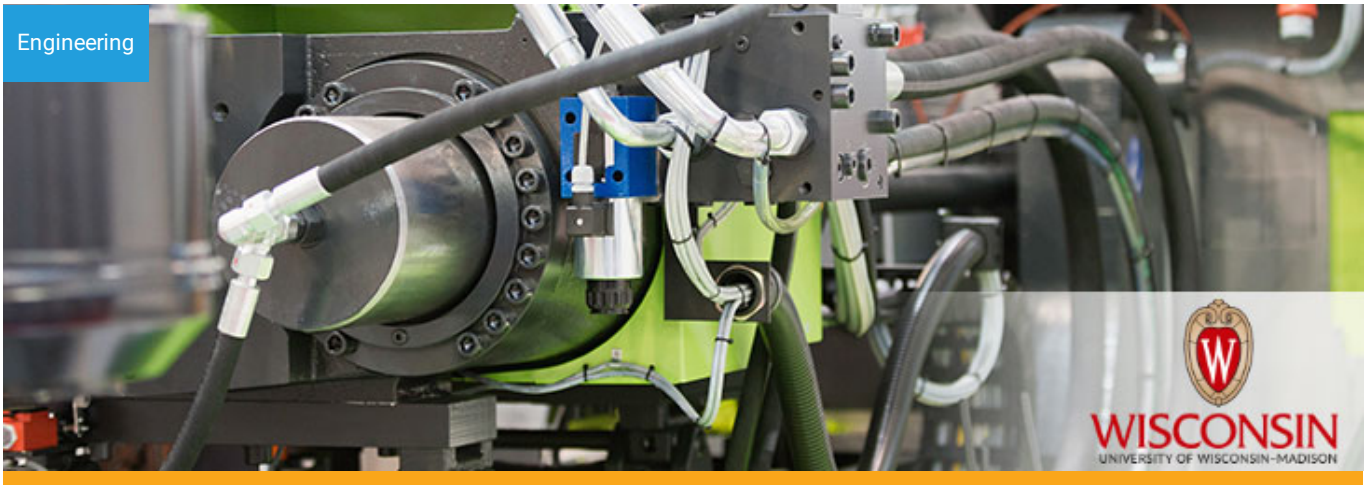


# COMPOSITIONS FOR STABILIZING METAL-FREE RING-OPENING METATHESIS POLYMERIZATION AND RELATED METHODS

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## The Invention

A solvent-less method for photo-redox mediated MF-ROMP that can be used to produce industrially relevant polymers. Recognizing that fluorinated alcohols have several comparable characteristics to ROMP solvents, the inventors hypothesized that they could be used in their place. Starting with hexafluoroisopropanol (HFIP), the inventors demonstrated the creation of solvent-separated radical-ion pairs (SSRIPs), which enable propagation of the reactive radical by preventing CRIPs. HFIP was then used in the synthesis of linear pDCPD, which was then shown to be compatible with bulk-curing.

## Applications

- ROMP derived polymers are useful in a range of applications including drug delivery, biomedical engineering, photovoltaics, and in the production of structural materials and solid parts.

## Key Benefits

- Reduces the need for halogenated solvents, which are costly and hazardous
- More economical than traditional metal mediated ROMP
- Eliminates need for costly metal initiators such as Ru, Mo, and W

## Additional Information

**For More Information About the Inventors**

- Andrew Boydston

**Tech Fields**

- Engineering : Additive manufacturing
- Materials & Chemicals : Synthesis

For current licensing status, please contact Michael Carey at mcarey@warf.org or 608-960-9867