

Novel Halogen-Free Ultra High Flame Retardant Polymers Through Enzyme Catalysis

Sethumadhavan Ravichandran^{a,g}, Subhalakshmi Nagarajan^{b,g}, Bon Choel Ku^c, Bryan Coughlin^d, Todd Emrick^d, Jayant Kumar^{e,g}, and Ramaswamy Nagarajan^{f,g*}

^a Department of Chemistry, University of Massachusetts, Lowell, MA 01854, USA

^b U.S Army Natick Soldier Research, Development, and Engineering Center, Natick, MA 01796, USA

^c Department of Polymer Science and Engineering, University of Massachusetts, Amherst, MA 01003, USA

^d Department of Polymer Science and Engineering, University of Massachusetts, Amherst, MA 01003, USA

^e Department of Physics, University of Massachusetts, Lowell, MA 01854, USA

^f Department of Plastics Engineering, University of Massachusetts, Lowell, MA 01854, USA.

*Email: Ramaswamy_Nagarajan@uml.edu; Fax: +1 978-458-9571, Tel: +1 978-934-3454

^g Center for Advanced Materials, University of Massachusetts, Lowell, MA 01854

† Electronic Supplementary Information (ESI) available:

Characterization of enzymatic synthesis was done using ¹H NMR spectra, collected using a Bruker 500 MHz NMR spectrometer. The solvent used was deuterated dimethylsulfoxide (DMSO - Cambridge Isotope Labs Inc.)

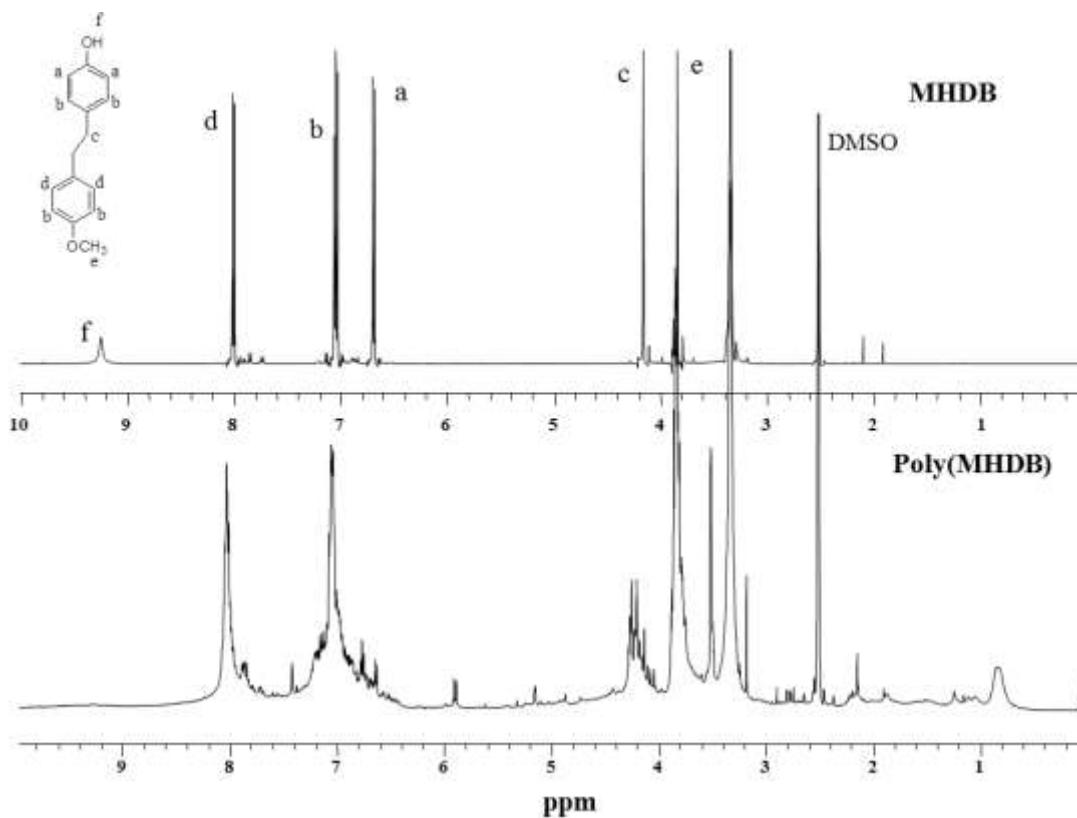


Figure. S1. ¹H NMR spectra of MHDB monomer and poly(MHDB)

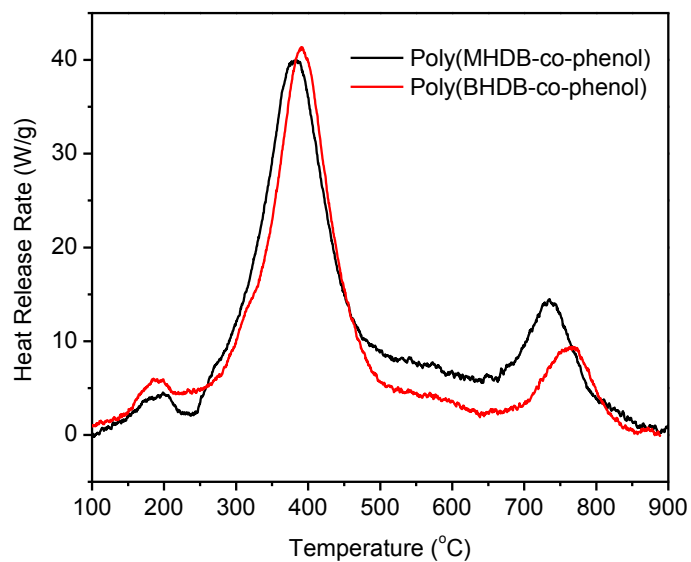


Figure. S2. Heat release rate curves for poly(BHDB/MHDB-co-phenol)