

NONLINEAR OPTICAL PENDANT LOW COLOR POLYIMIDES. *B. Loesch, M. Illingsworth**, Department of Chemistry, bpl9565@rit.edu, mlisch@rit.edu

The goal of this project is to create a novel low color polyimide to which both NLO and UV-crosslinkable groups can be selectively attached. An NLO pendant group was synthesized using a Wittig reaction. The product was purified using column chromatography and its structure confirmed by 2D NMR. A two component polyimide has also been synthesized using solution imidization. It was shown to be soluble after imidization and produced colorless films. Mellitic acid dianhydride (MADA) was synthesized and its purity confirmed using TGA. A model compound of MADA and 2-aminophenol is currently being synthesized using solution imidization, and is in the process of being characterized by IR and ¹H NMR. This molecule features two types of functional groups for pendant attachment. These groups include a phenol and carboxylic acid, both of which will be present in the final polymer. Conditions determined from the model compound reaction will be used to synthesize the MADA containing polyimide backbone. NLO pendant and crosslinkable groups will then be attached in one pot to the model compound and subsequently the polyimide using a Mitsunobu reaction.