**Supporting Information**

**A Non-isothermal Curing Kinetic Studies of Novolac type Phenol-Formaldehyde resin for 3D Printing of Sustainable Building design**

Archana Bansode†, ‡, Iris Beatriz Vega Erramuspe§, Lorena Alexandra Portilla Villarreal§, Braden Hahn‡, Brian K. Via§, Allan David‡, Nicole Labbé¶, Maria L. Auad\*, †, ‡

*†Center for Polymers and Advanced Composites, Gavin Engineering Research Laboratory, Auburn University, 311 West Magnolia Avenue, Auburn, Alabama 36849, United States*

*‡Department of Chemical Engineering, Ross Hall, Auburn University, 222 Foy Union Circle, Auburn, Alabama 36849, United States*

*§Forest Products Development Center, College of Forestry, Wildlife and Environment, Auburn University, 520 Devall Drive, Auburn, Alabama 36849, United States*

*¶Center for Renewable Carbon, University of Tennessee, 2506 Jacob Drive, Knoxville, TN, 37996, United States of America*

**\*Corresponding Authors**

**Dr. Iris Beatriz Vega Erramuspe**

520 Devall Dr, Auburn University,

Auburn, AL, 36849-5418, United States of America

Tel: +1334-5246076

Email Address: beatriz.vega@auburn.edu

**Dr. Maria L. Auad**

1301 Shelby Center, Auburn University,

Auburn, AL, 36849-5330, United States of America

Tel: +1334-8445459

Email Address: auad@auburn.edu

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| **Compound** | **Source** | **Initial Purity** | **Purification Method** | **Final Purity** | **Purity Basic** | **Explanation** |
| Phenol crystals | VWR International | 99% | - | 99% | Mass | The compound was obtained from the supplier with an initial purity of 99% and used as such, with no further purification. |
| Formalin solution (37% formaldehyde in water) | VWR International | 37% | - | 37% | Mass | The compound was obtained from the supplier with an initial purity of 37% and used as such, with no further purification. |
| Acetone | VWR International | 99.5% | - | 99.5% | Mass | The compound was obtained from the supplier with an initial purity of 99.5% and used as such, with no further purification. |
| Oxalic acid (anhydrous crystal) | Spectrum Chemical Mfg. Corp | 98.0% | - | 98.0% | Mass | The compound was obtained from the supplier with an initial purity of 98.0% and used as such, with no further purification. |
| Bio-oil | Received from the Center for Renewable Carbon Laboratory, University of Tennessee | N/A | - | - | Mass | It is a mixture of compounds isolated from the organic phase of bio-oil, with 11.5 % of water. |

**Table S1: Compound Purity Information**

Diagram

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**Figures S1:** The reaction mechanism of bionovolac phenol-formaldehyde resin (BNPF)

A graph of different colored lines

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**Figure S2** Resin characterization by FTIR (a) Novolac phenol-formaldehyde resin and, (d) biobased novolac phenol-formaldehyde resin [Adapted from our previous publication: Synthesis of Biobased Novolac Phenol–Formaldehyde Wood Adhesives from Biorefinery-Derived Lignocellulosic Biomass (2021) ACS Sustainable Chemistry & Engineering, 9 (33), 10990–11002.]

A graph of a graph

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**Figure S3** Resin characterization by 1H NMR (a) Novolac phenol-formaldehyde resin and, (d) bionovolac phenol-formaldehyde resin [Adapted from our previous publication: Synthesis of Biobased Novolac Phenol–Formaldehyde Wood Adhesives from Biorefinery-Derived Lignocellulosic Biomass (2021) ACS Sustainable Chemistry & Engineering, 9 (33), 10990–11002.]