

Supplementary Materials for

Formose Reaction Controlled by a Copolymer of *N,N*-Dimethylacrylamide and 4-Vinylphenylboronic Acid

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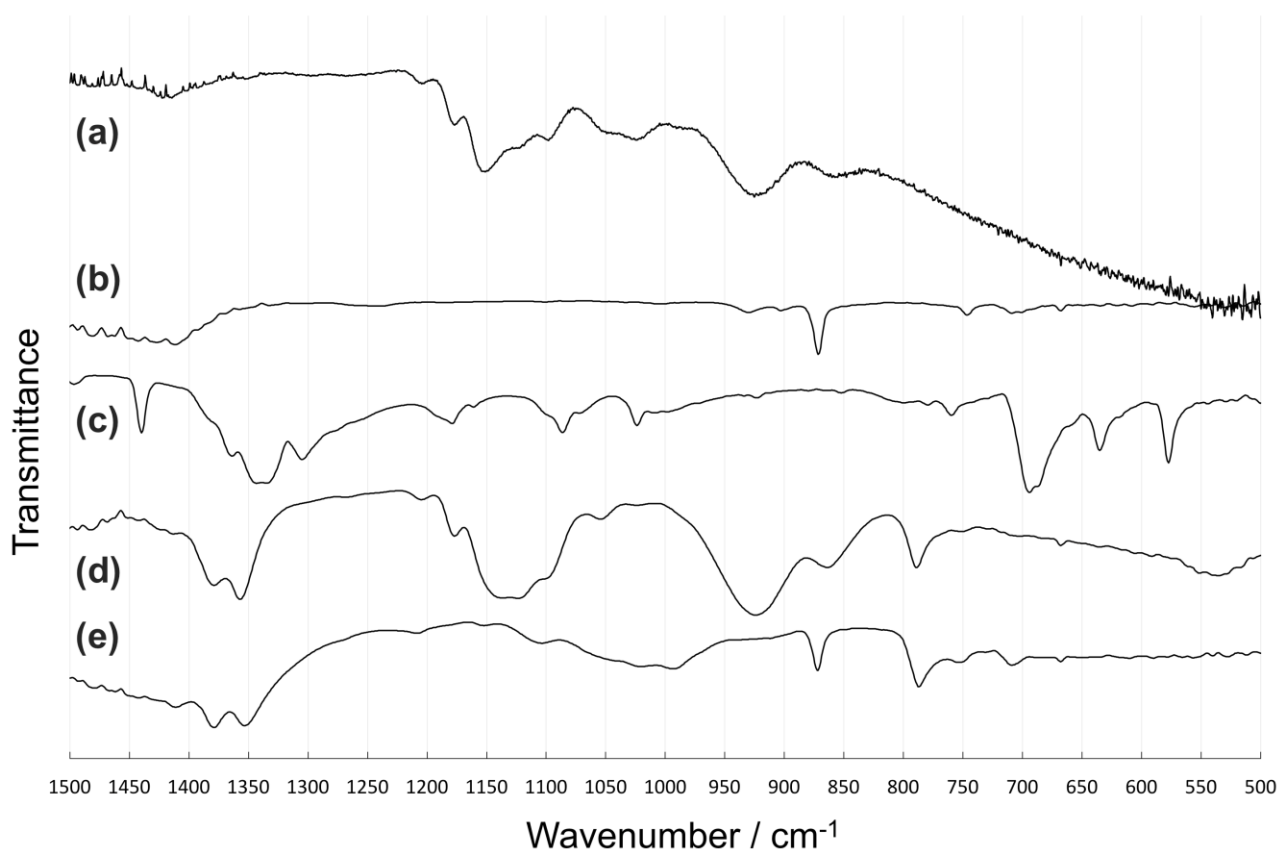


Figure S1. IR spectra for the standard samples and the reaction mixtures: A mixture of 1 M formaldehyde and 120 mM calcium hydroxide in water (a), a mixture of 120 mM calcium hydroxide and 2 mM PBA in water (b), PBA (c), the mixtures containing 1 M formaldehyde, 120 mM calcium hydroxide, and 2 mM PBA before (d) and after formose reaction at 60 °C for 60 min (e). The measurements were carried out after evaporation of the solvent by air blowing on a diamond prism loaded in the ATR attachment.

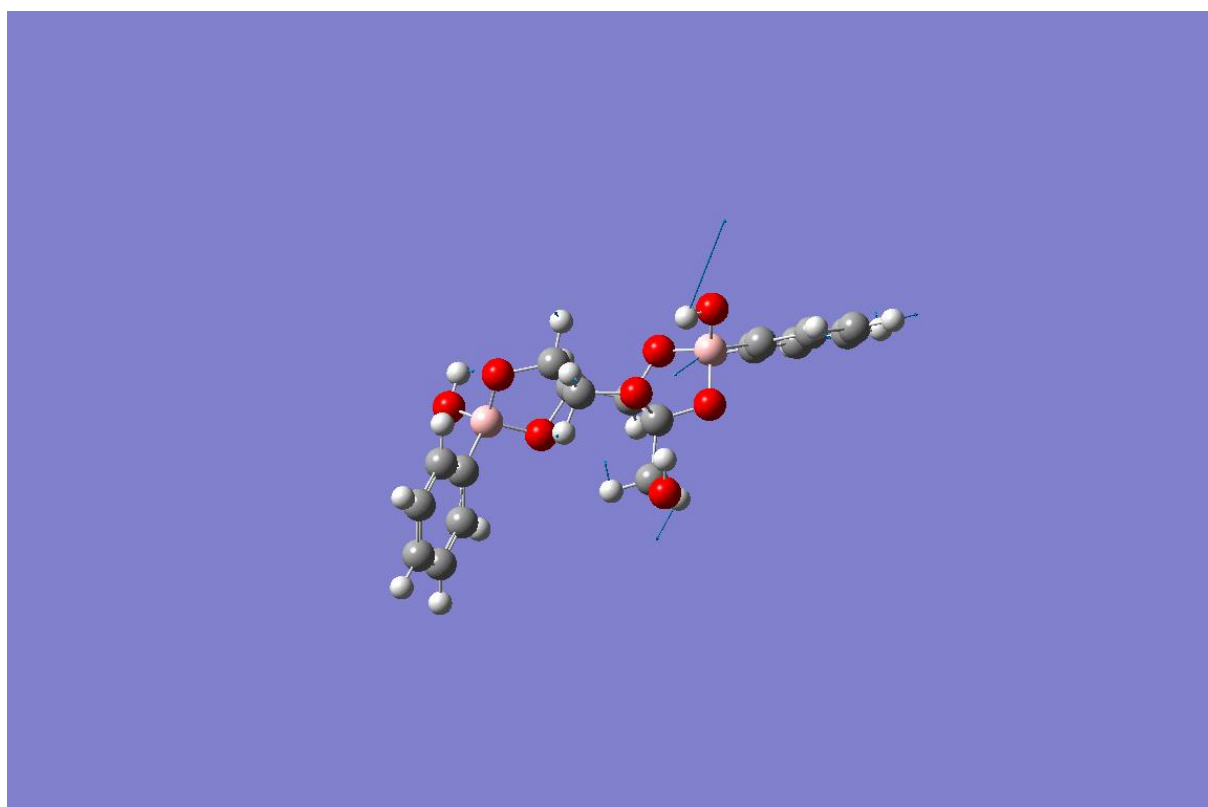
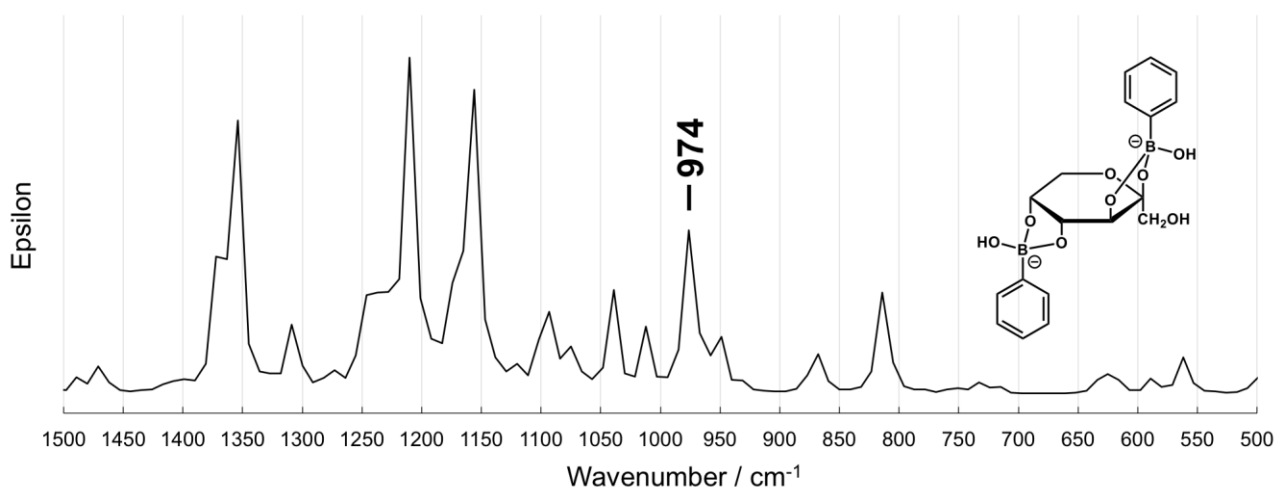


Figure S2. IR spectrum computationally calculated for the ester of quaternized diphenylboronic acid with fructose using a Gaussian 09W software with the following settings: Calculation type, Frequency; calculation method, RHF; basis set, 3-21G (upper) and a snapshot of the three-dimensional vibrational structure responsible for the absorption band at 974 nm⁻¹ (lower).

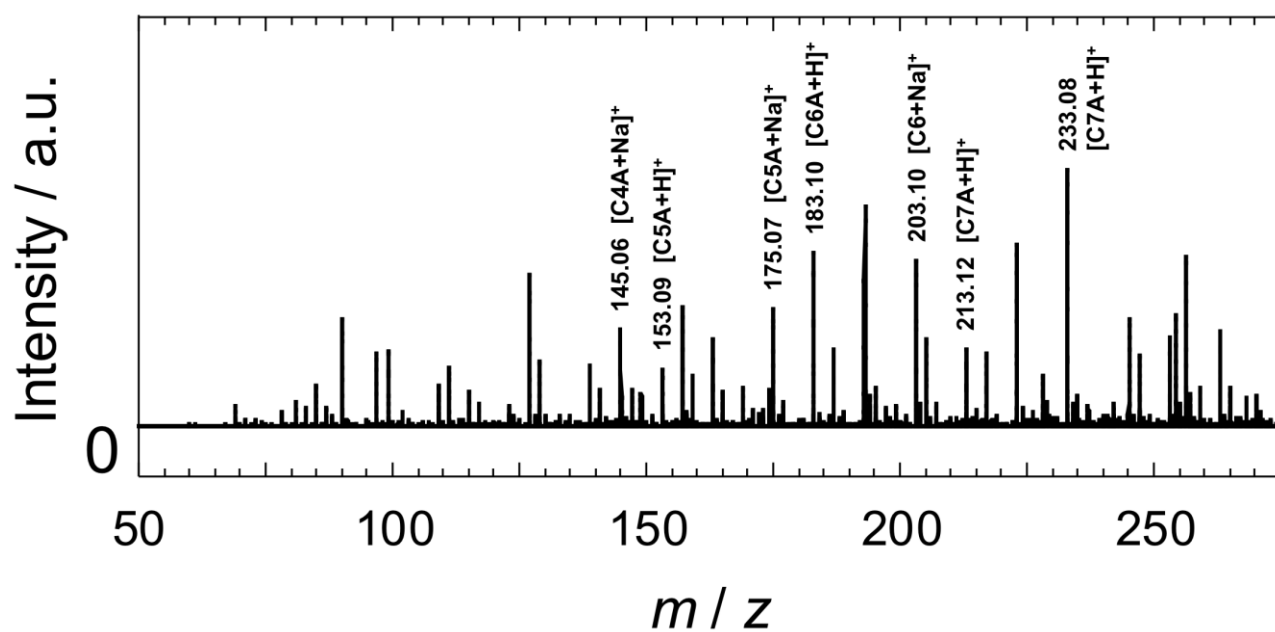


Figure S3. Mass spectrum recorded in LC-MS measurements for the region of 7 – 14 min in Figure 4 (c), corresponding to the products of formose reaction carried out using 1 M formaldehyde and 120 mM calcium hydroxide at 60 °C for 20 min in the absence of the boronic acid compounds.

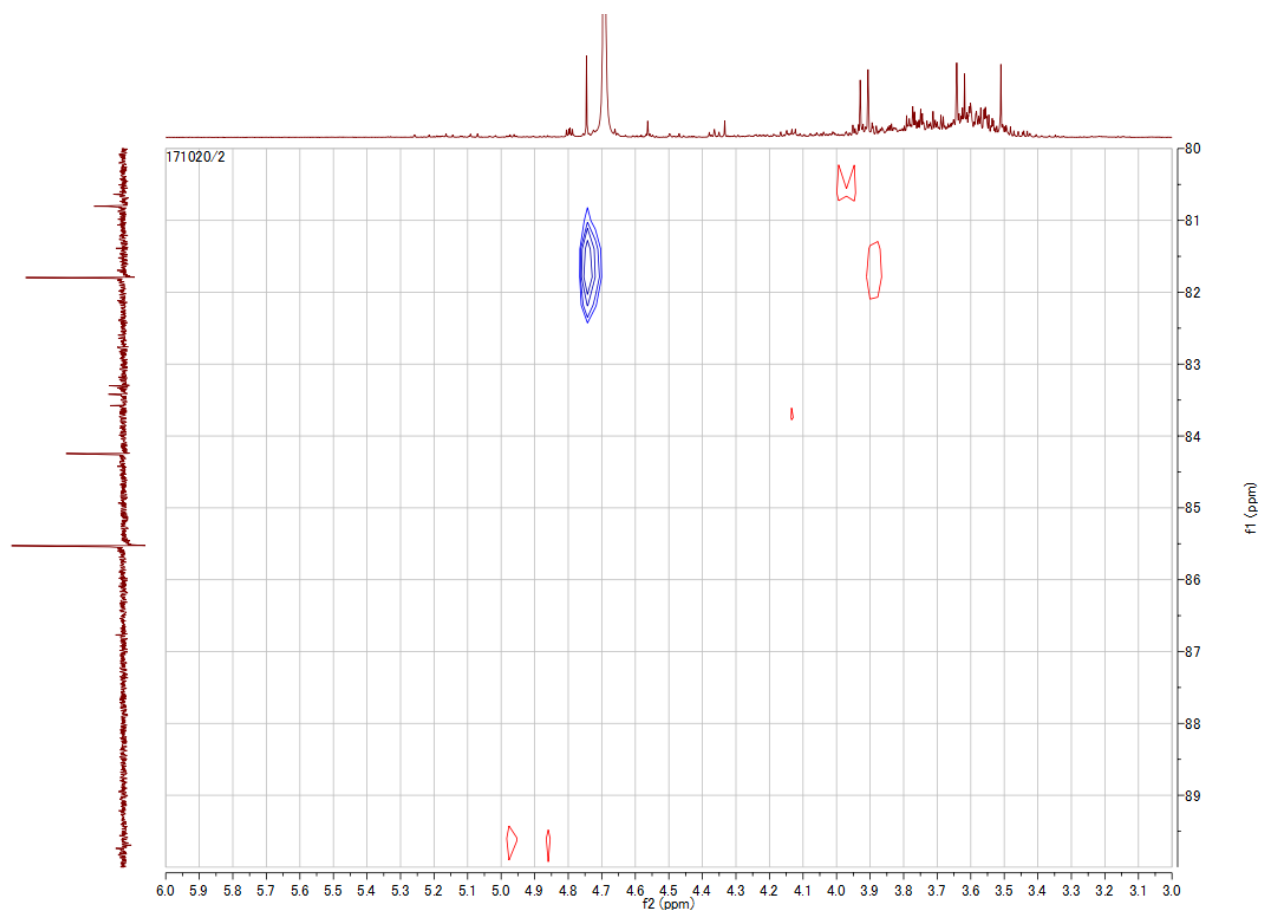


Figure S4. HSQC spectrum for the product of formose reaction carried out using 1 M formaldehyde and 120 mM calcium hydroxide at 60 °C for 60 min in the presence of 5 g L⁻¹ pDMA/VBA. The signals due to quaternary carbons in the ppm range of 80 – 86 ppm do not show any correlations with ¹H signals.

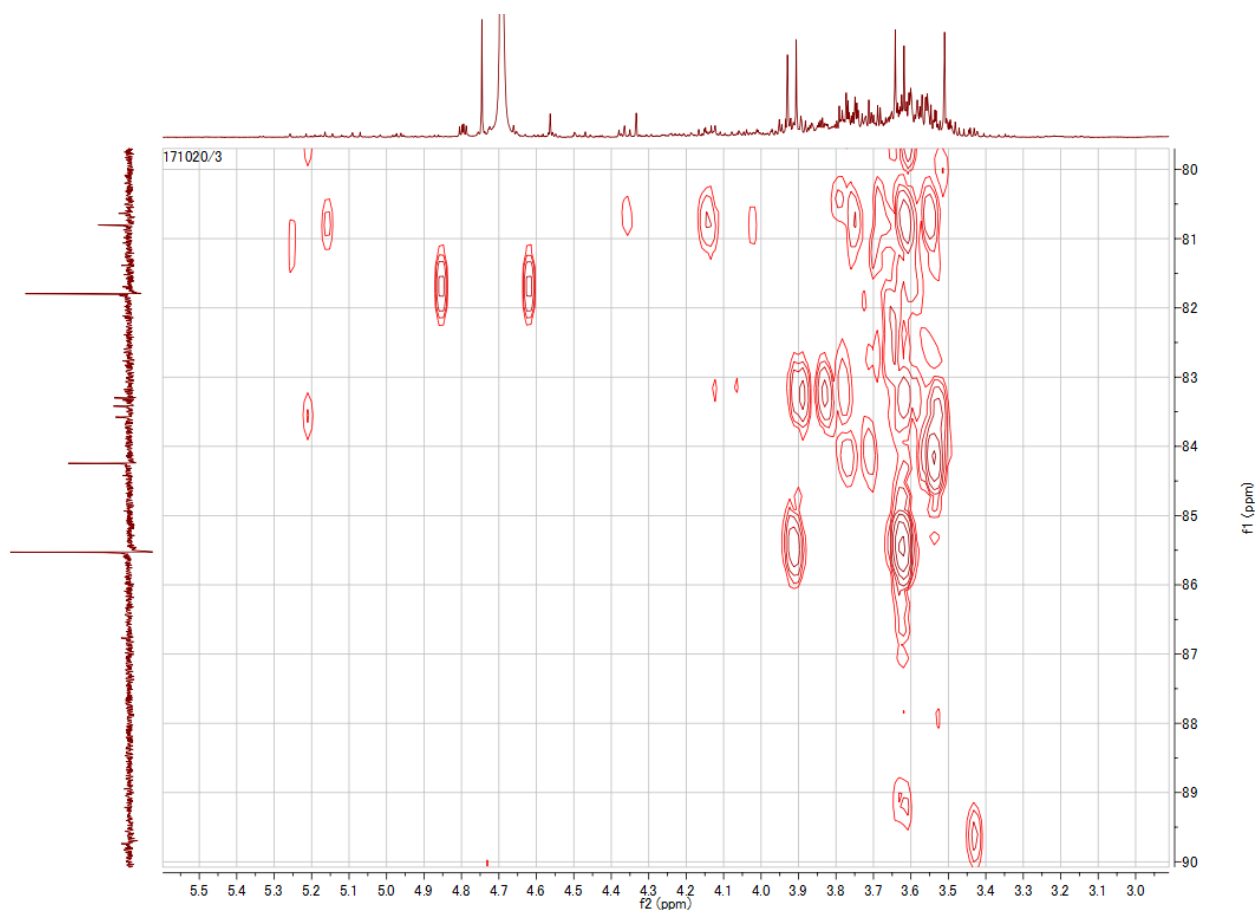


Figure S5. HMBC spectrum for the product of formose reaction carried out using 1 M formaldehyde and 120 mM calcium hydroxide at 60 °C for 60 min in the presence of 5 g L⁻¹ pDMA/VBA. The signals due to quaternary carbons in the ppm range of 80 – 86 ppm show correlations with ¹H signals.