

Article for Polymer Chemistry

Supporting Information

Effect of biopolyimide molecular design on their silica hybrids thermo-mechanical, optical and electrical properties

S. Dwivedi,^a S. Sakamoto,^a S. Kato,^c T. Mitsumata^{b,c} and T. Kaneko^{a,b}

^a*Graduate School of Advanced Science and Technology, Energy and Environment Area, Japan Advanced Institute of Science and Technology, 1-1 Asahidai, Nomi, Ishikawa 923-1292, Japan*

^b*Japan Science and Technology, ALCA, Tokyo 102-0076, Japan*

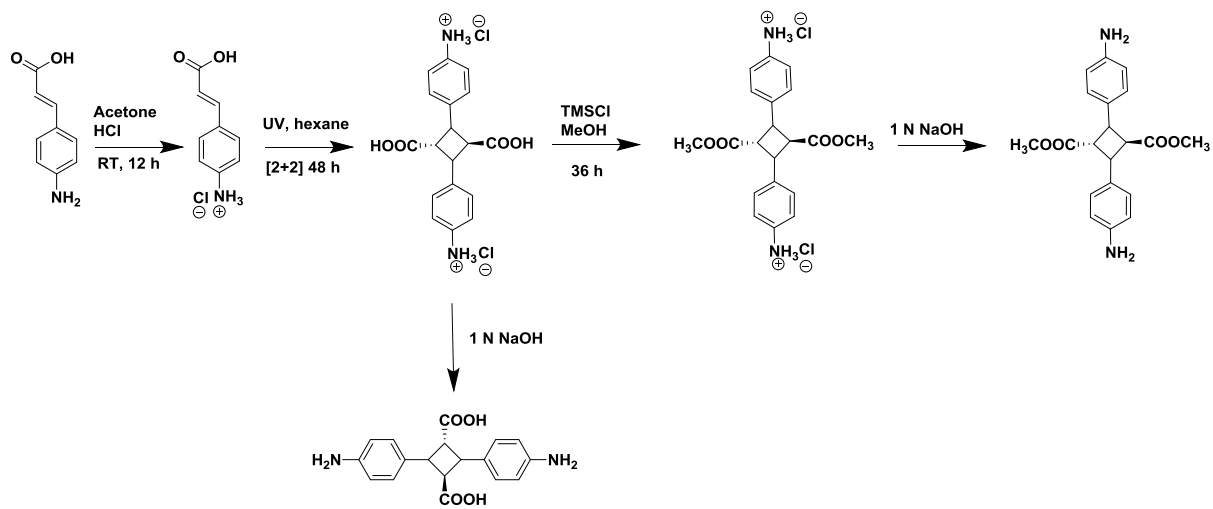
^c*Department of Materials Science & Technology, Faculty of Engineering, Niigata University, Ikarashi, Nishi-ku, Niigata 950-2181 Japan*

† Corresponding Author

Tatsuo Kaneko

Email: kaneko@jaist.ac.jp

Electronic Supplementary Information (ESI) available: [Polyimide Synthesis and Characterization]. See DOI: 10.1039/x0xx00000x



Scheme S1. Monomer synthesis from 4-aminocinnamic acid (4ACA)

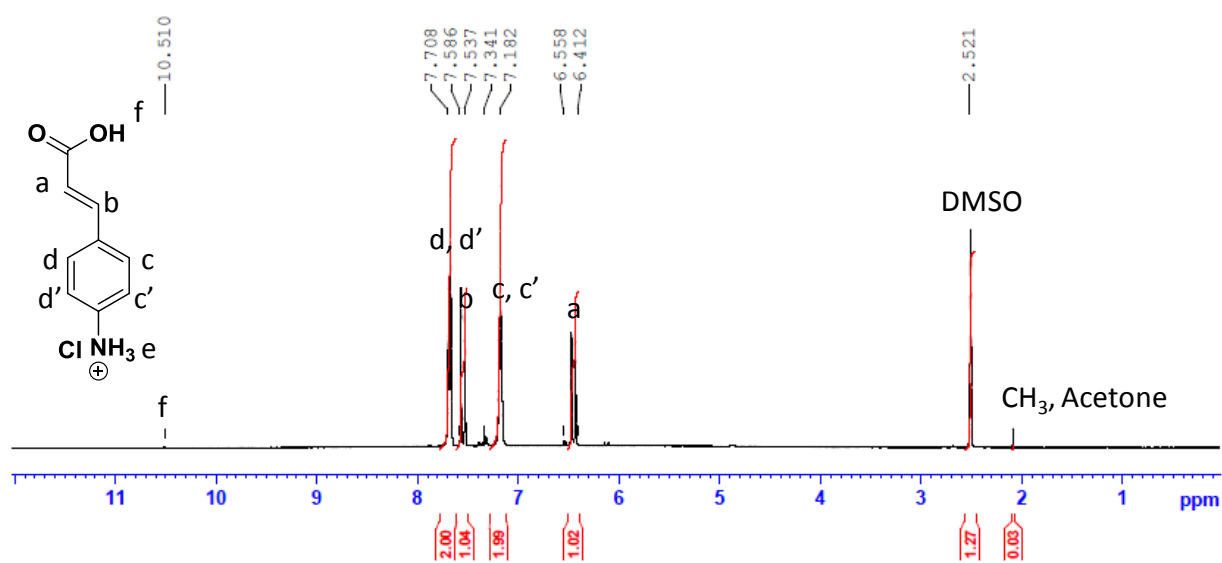


Figure S1. ¹H NMR characterization for 4ACA salt

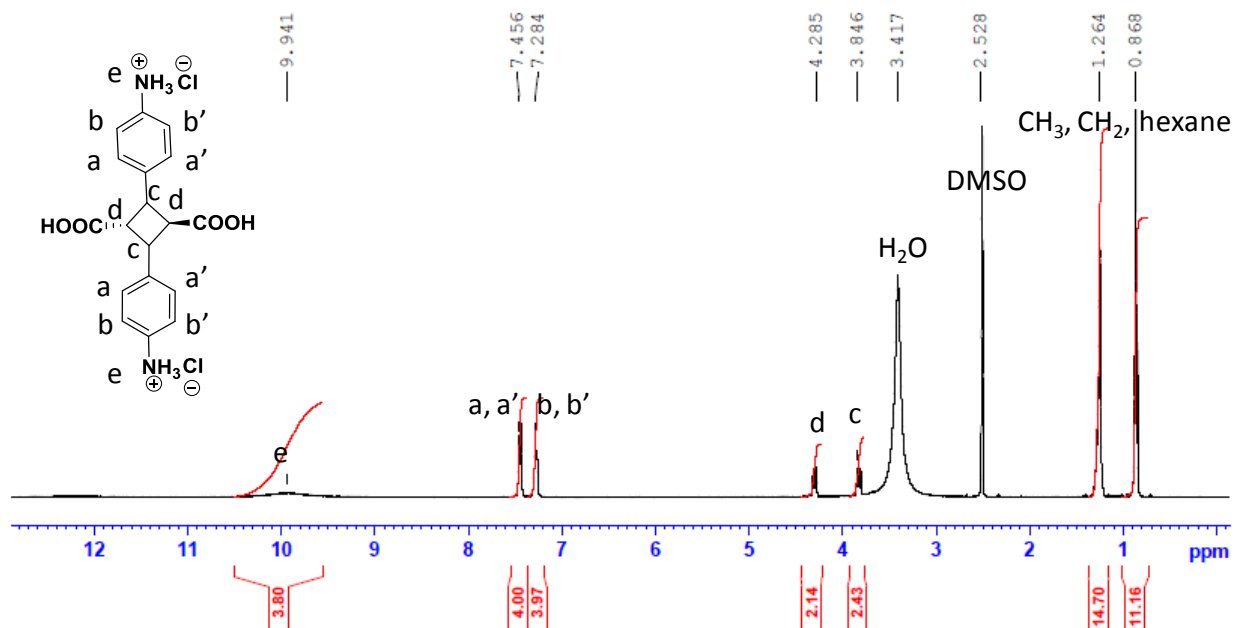


Figure S2. ^1H NMR characterization for 4ATA salt

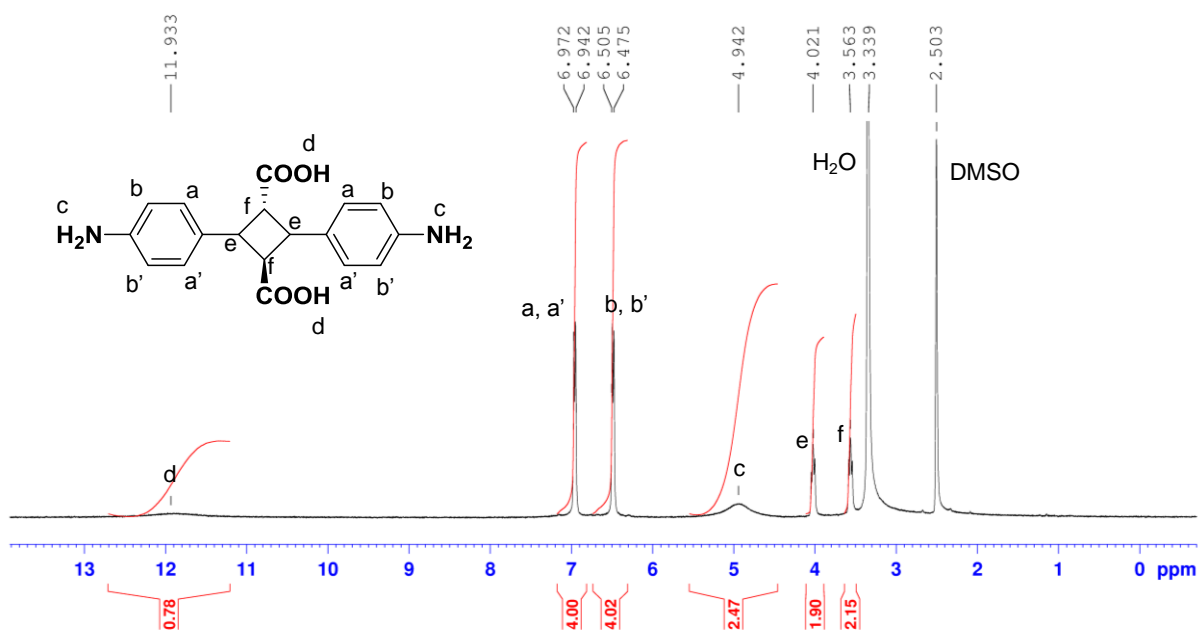


Figure S3. ^1H NMR characterization for 4ATA acid

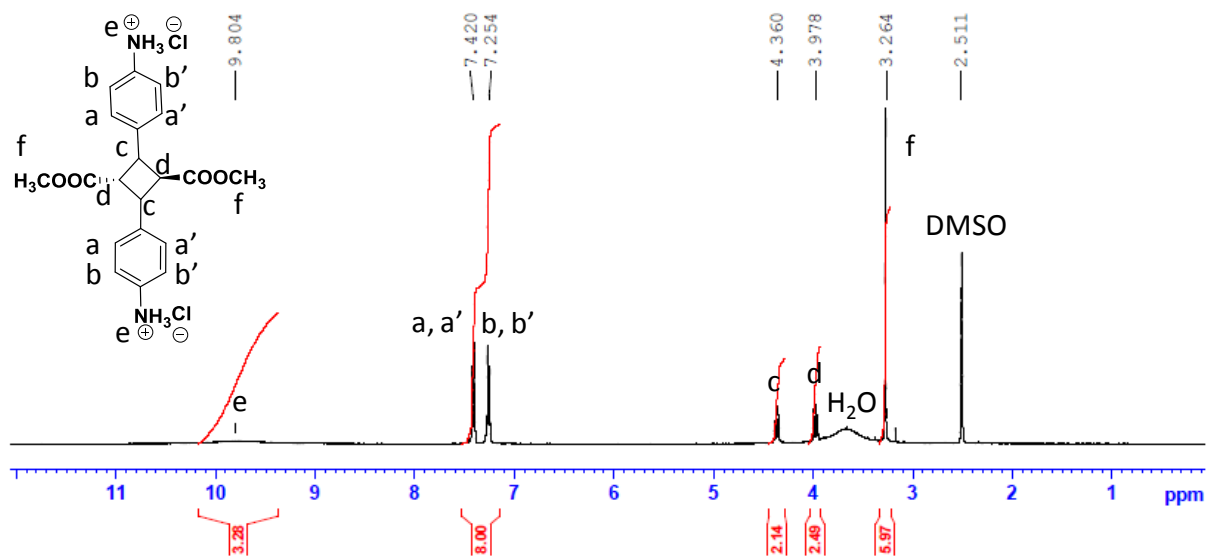


Figure S4. ^1H NMR characterization for 4ATA methyl ester salt

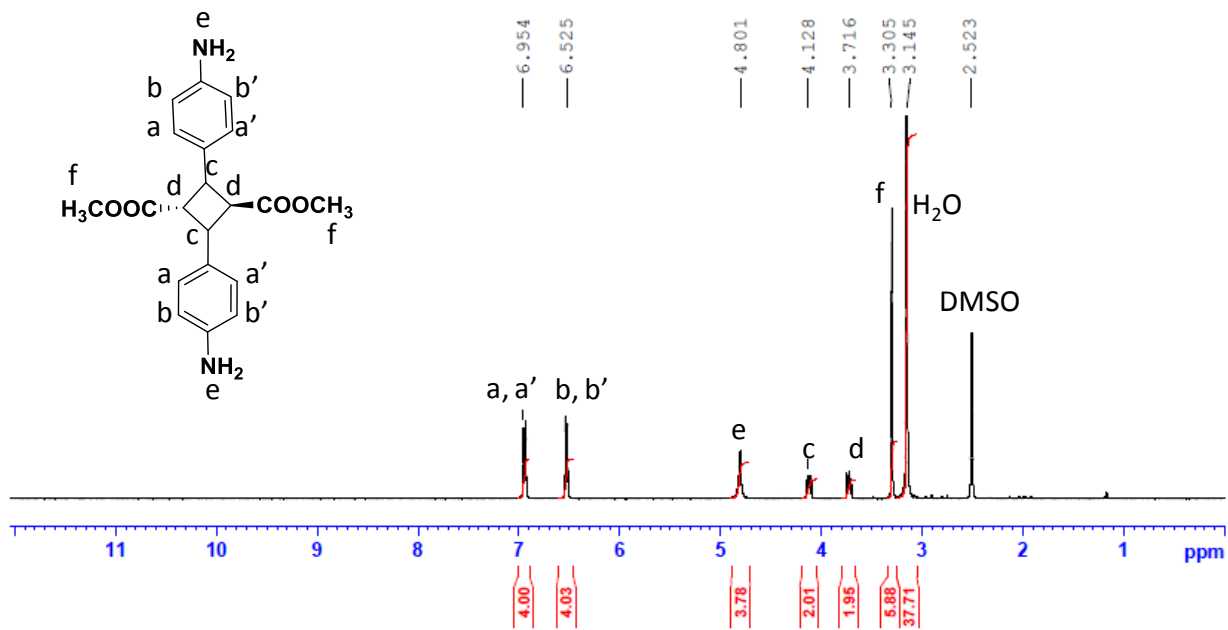


Figure S5. ¹H NMR characterization for 4ATA methyl ester

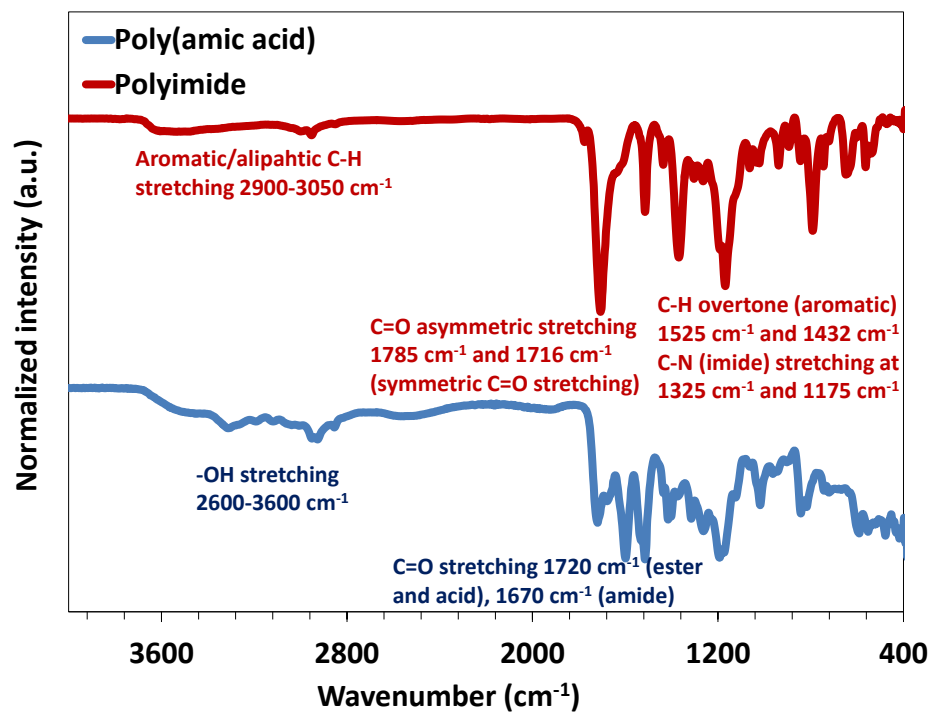


Figure S6. FTIR characterization for the prepared poly(amic acid) and polyimide

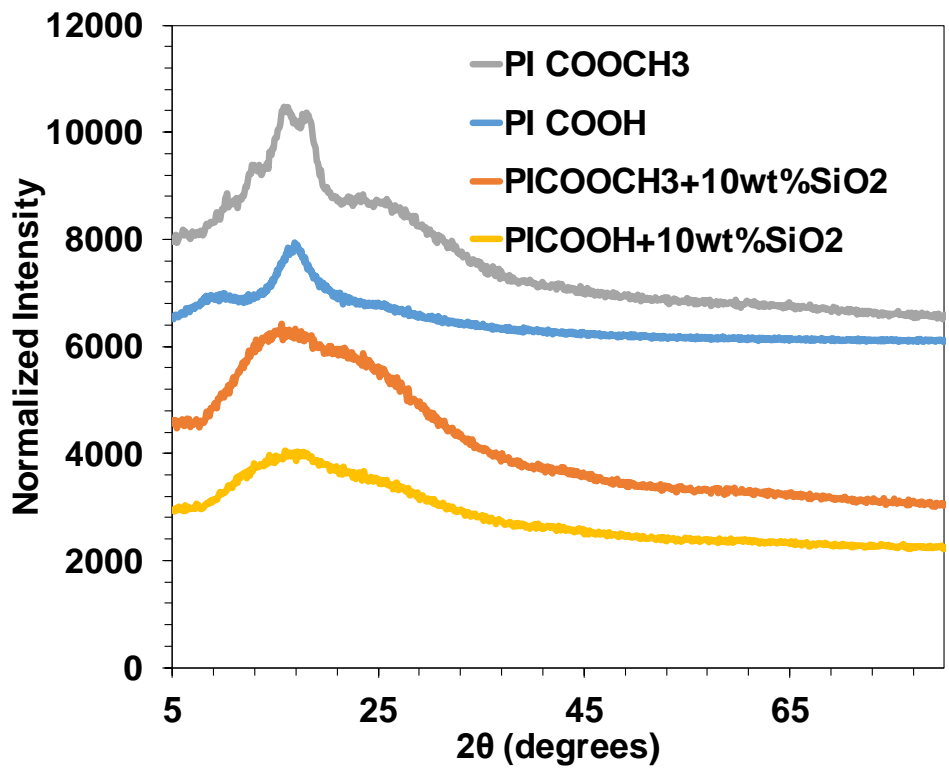


Figure S7. XRD patterns for the neat biopolyimide and after introducing 10 wt% of silica

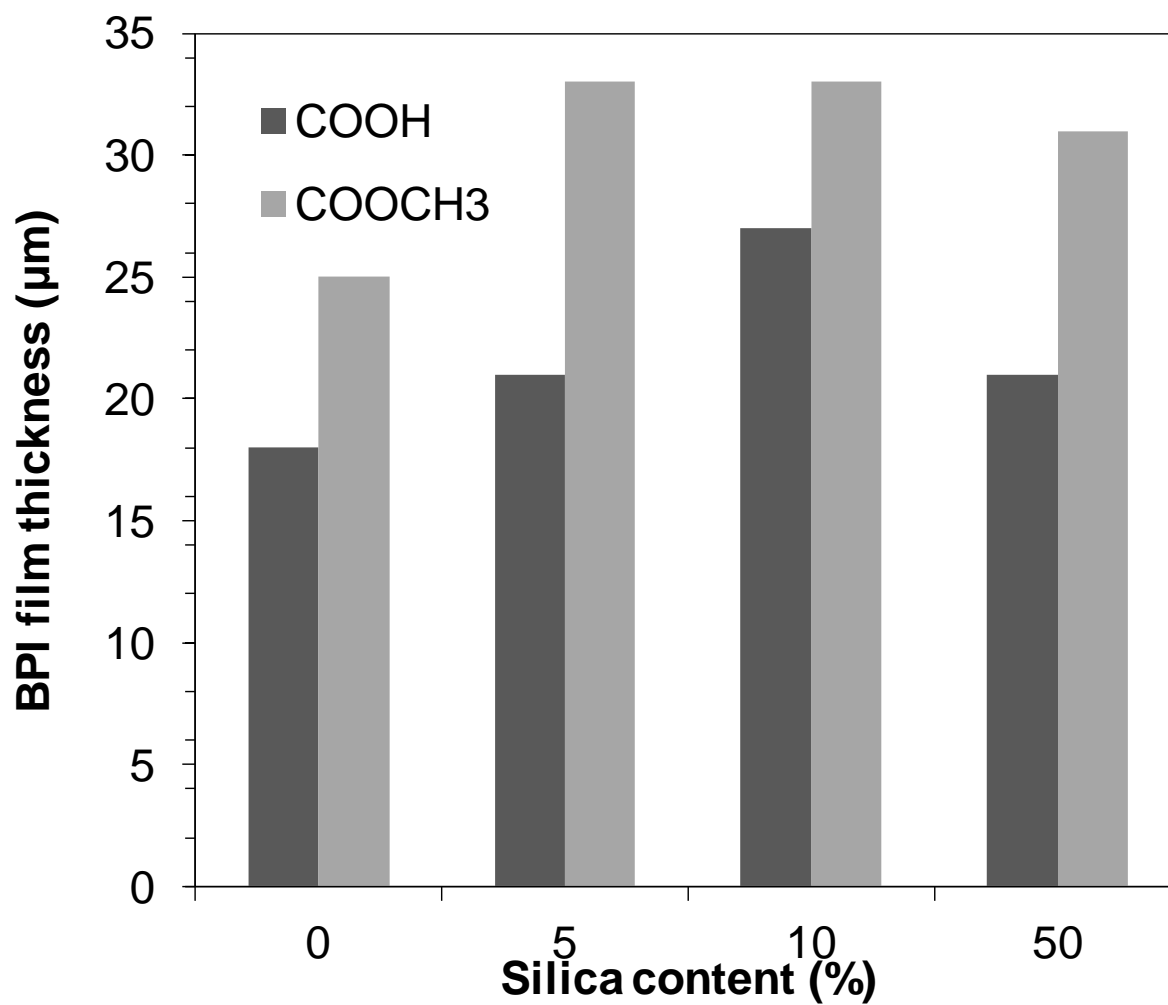


Figure S8. BPI film thickness with/without silica used for the electric breakdown voltage test