

N-boronated polybenzimidazole for composite electrolyte design of single ion conductivity

Aniruddha Nag^a, Mohammad Asif Ali^a, Ankit Singh^a, Raman Vedarajan^{a, b}, Noriyoshi Matsumi^{a*},
Tatsuo Kaneko^{a*}

^aGraduate 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

^bCentre for Fuel Cell Technology, International Advanced, Research Centre for Powder
Metallurgy, Phase I - 2nd Floor, IITM Research Park, Taramani, Chennai 600113, India

E-mail: kaneko@jaist.ac.jp, matsumi@jaist.ac.jp

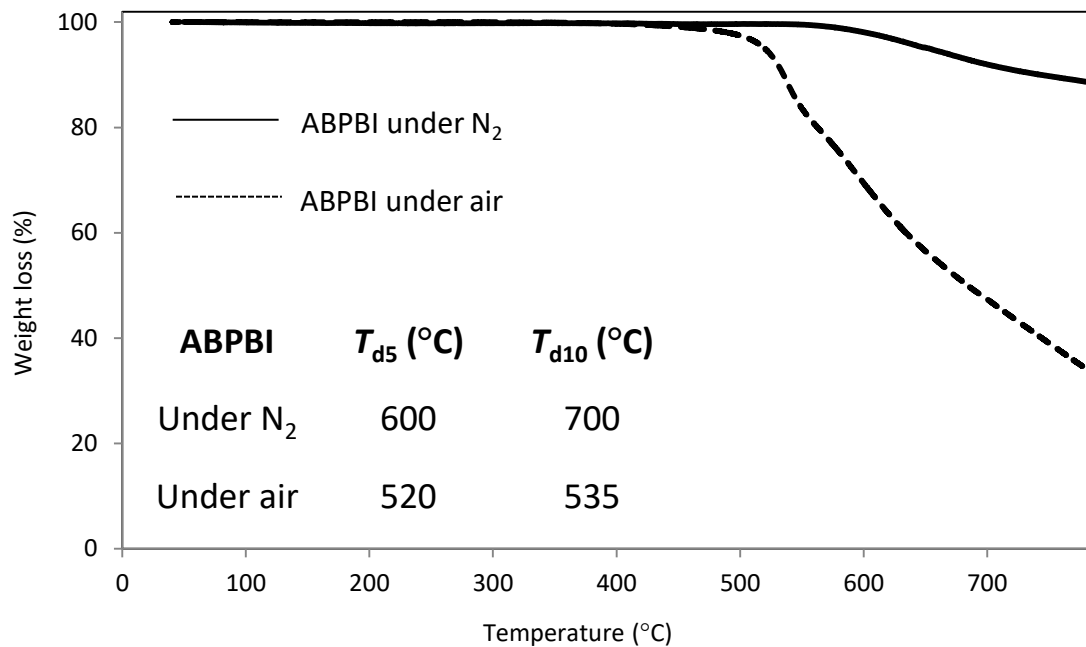


Fig. S1 TGA plots of poly(2, 5-benzimidazole) under different atmosphere

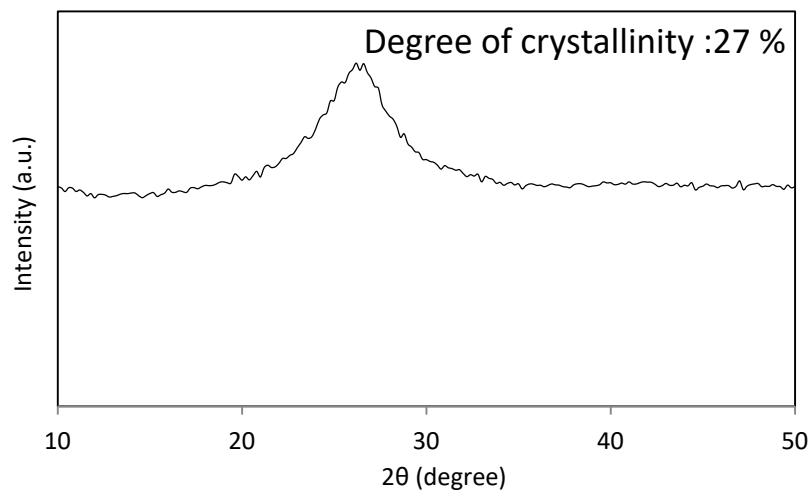


Fig. S2 Wide angle x-ray diffraction (WAXD) diagrams of poly(2, 5-benzimidazole)

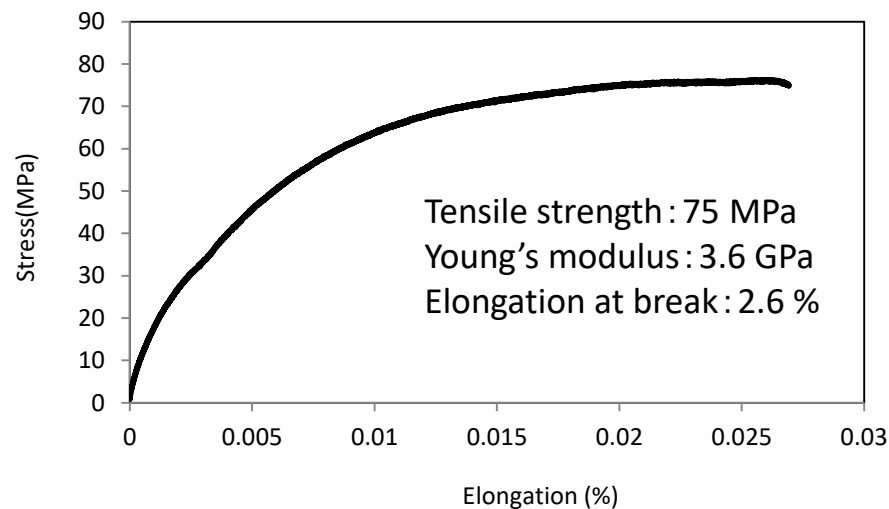


Fig. S3 Stress-strain curves of poly(2, 5-benzimidazole)

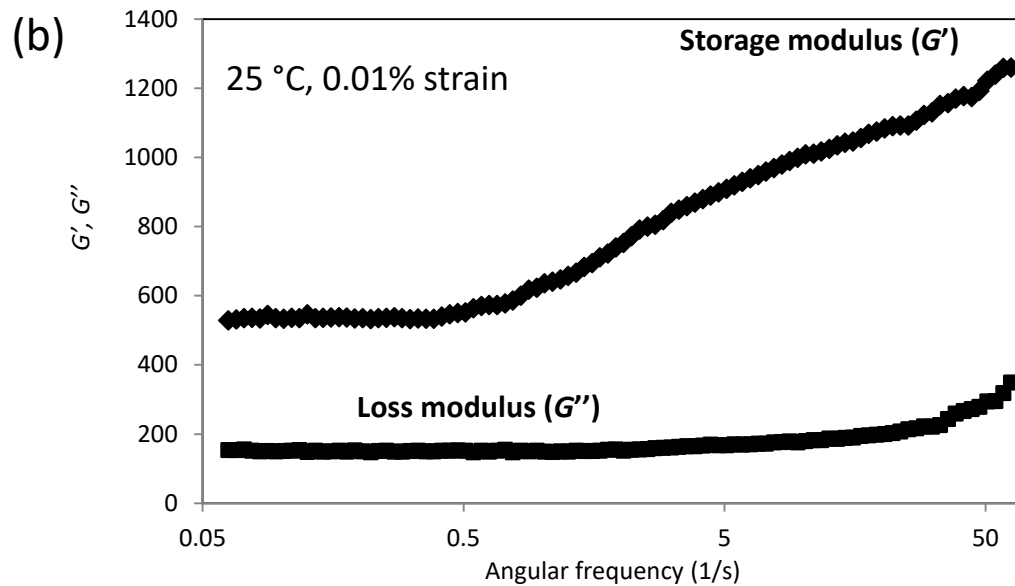
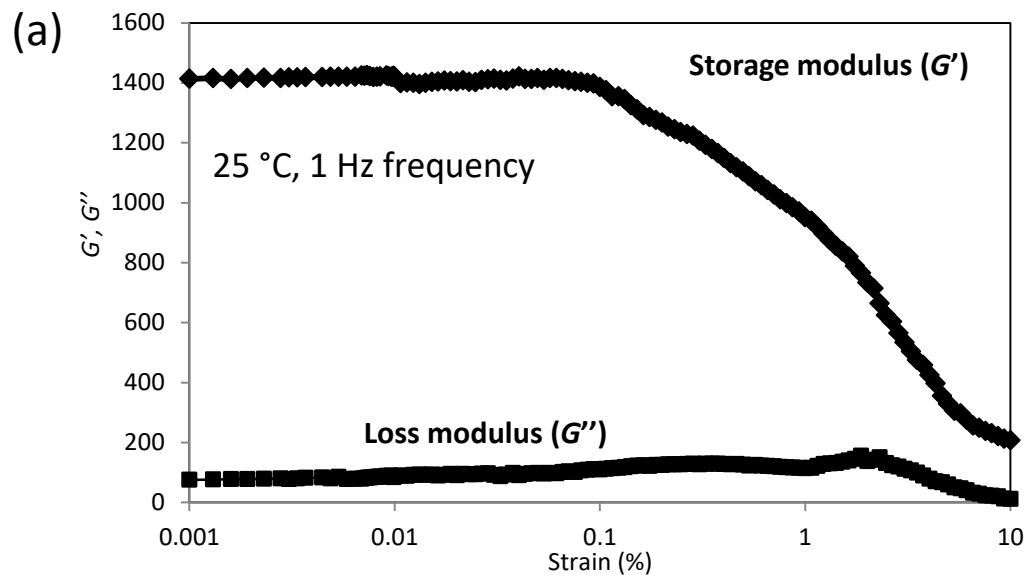


Fig. S4 Storage moduli, G' and loss moduli, G'' of the polymer electrolyte (25/75) measured with varying (a) shear strain, (b) shear frequency

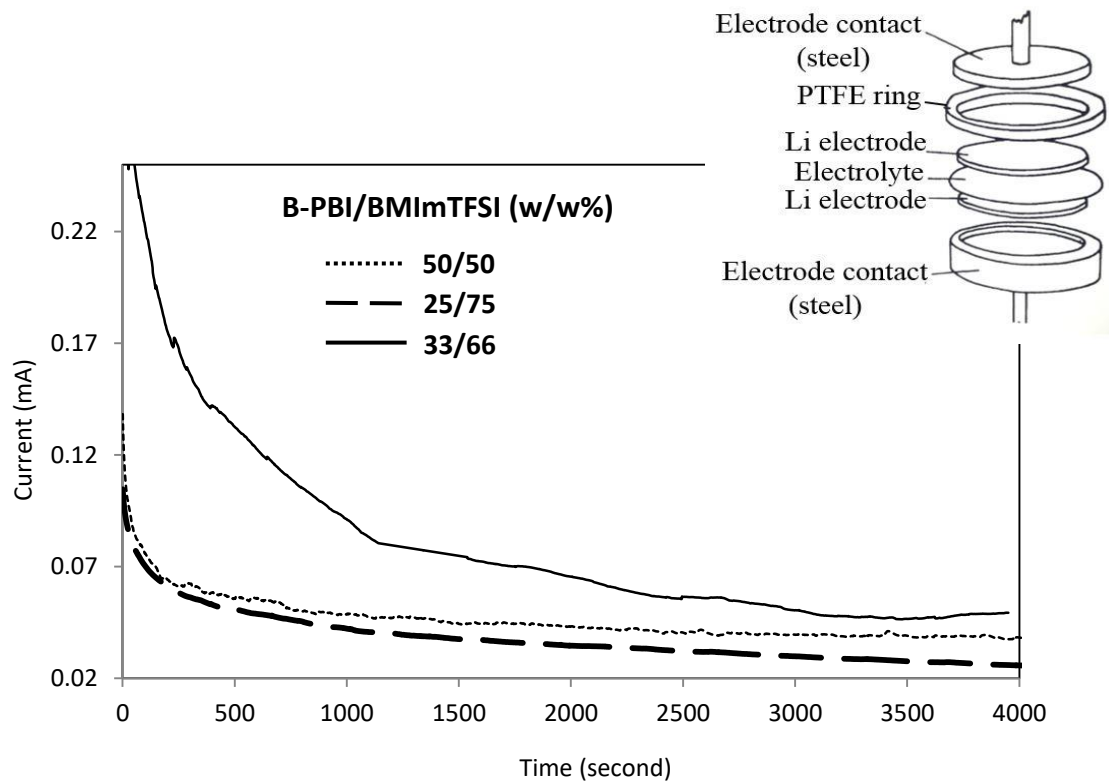


Fig.S5 DC Polarization profiles of various composites of boronated polybenzimidazole with BMIImTFSi
 Inset: Cell set-up for DC polarization

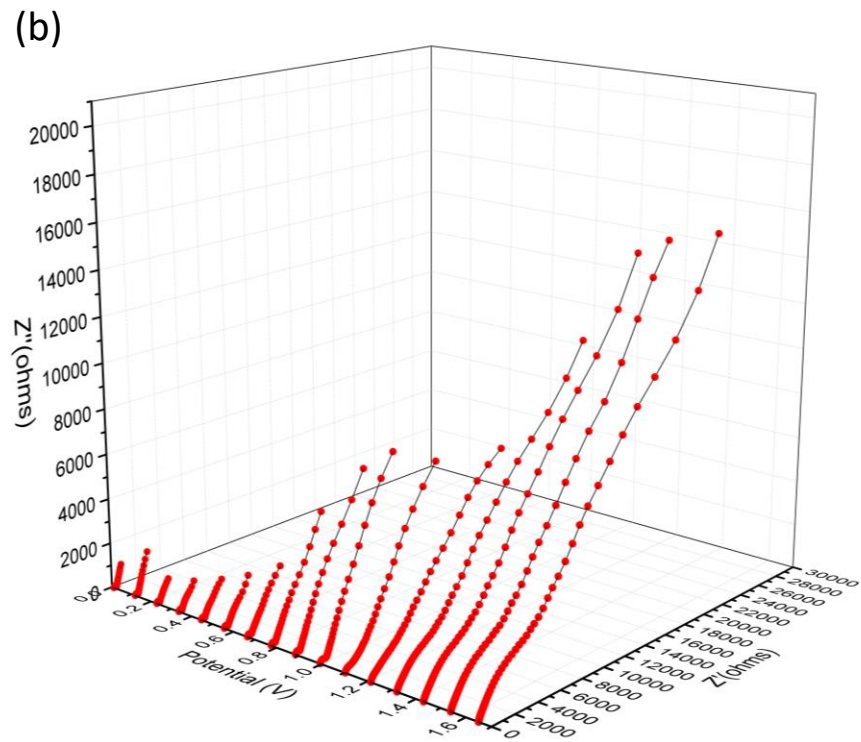
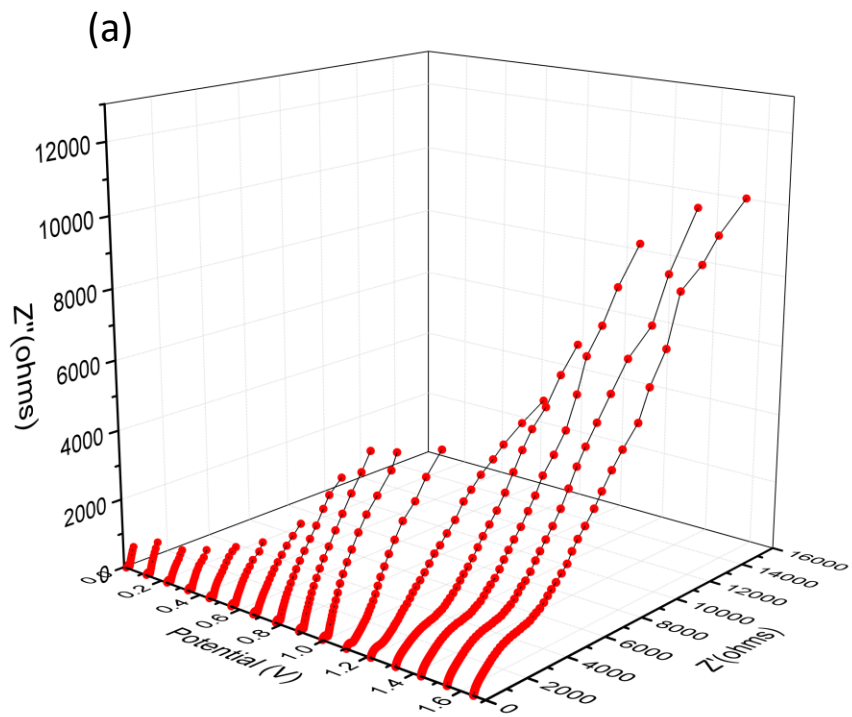


Fig. S6 DEIS profile during discharging of an anodic half-cell using polymer electrolyte (25/75), (a) freshly prepared cell, (b) after 10 cycles at charging rate of 0.5 C