Supporting Information for

Building Blocks for Ionic Liquids: Vapor Pressures and Vaporization Enthalpies of Alkoxy Derivatives of Imidazole and Benzimidazole

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Contents

- ^{1}H NMR data for alkoxy-functionalized benzimidazoles
- ^{1}H NMR spectra images for alkoxy-functionalized benzimidazoles

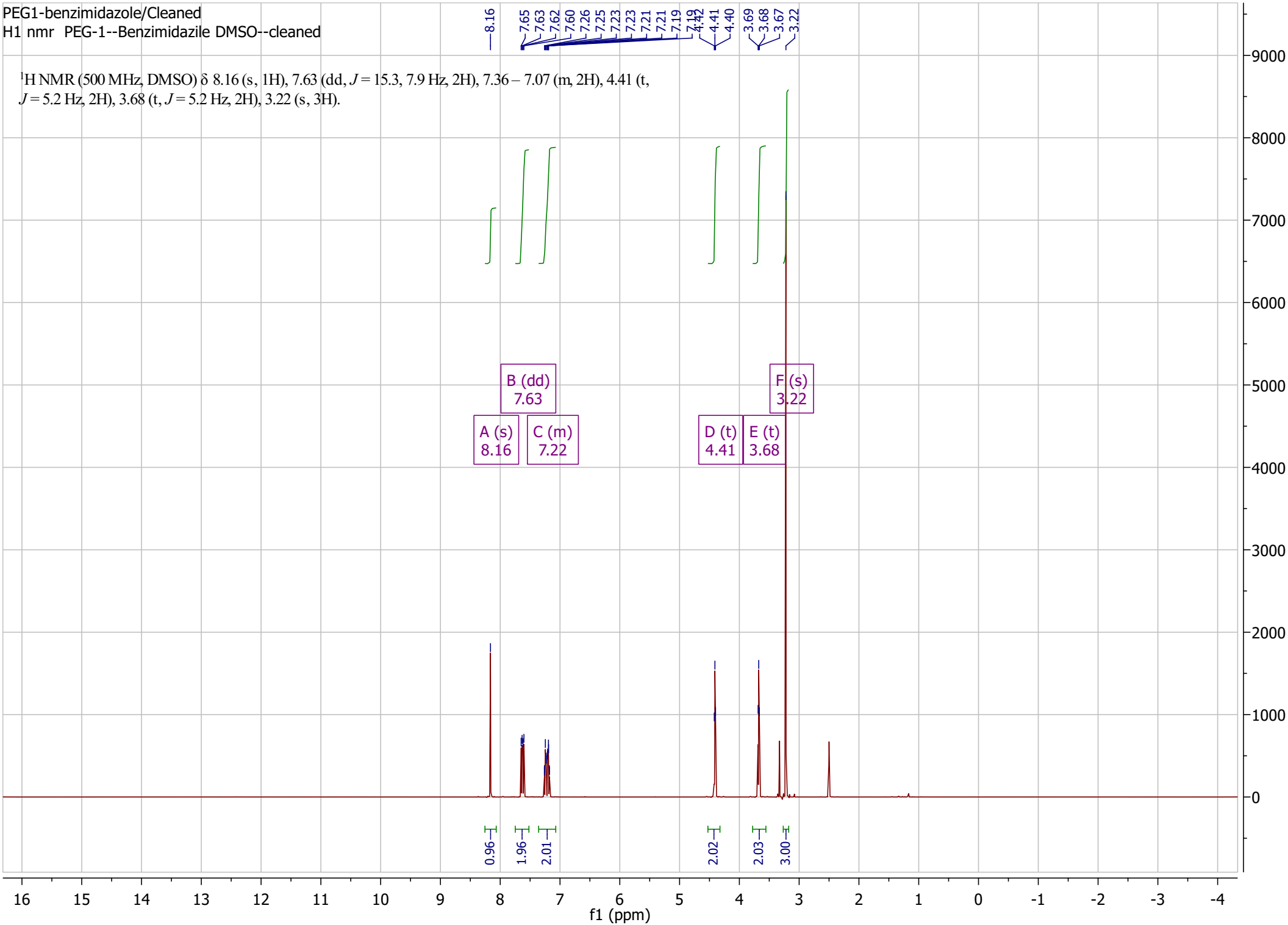
PEG_1-benzimidazole: ^{1}H NMR (500 MHz, DMSO) δ 8.16 (s, 1H), 7.63 (dd, *J* = 15.3, 7.9 Hz, 2H), 7.36 – 7.07 (m, 2H), 4.41 (t, *J* = 5.2 Hz, 2H), 3.68 (t, *J* = 5.2 Hz, 2H), 3.22 (s, 3H).

PEG_2-benzimidazole: ^{1}H NMR (500 MHz, DMSO) δ 8.17 (s, 1H), 7.63 (dd, *J* = 13.7, 7.9 Hz, 2H), 7.22 (dt, *J* = 15.1, 7.2 Hz, 2H), 4.40 (t, *J* = 5.2 Hz, 2H), 3.76 (t, *J* = 5.2 Hz, 2H), 3.50 (dd, *J* = 5.6, 3.7 Hz, 2H), 3.37 (dd, *J* = 8.2, 3.9 Hz, 2H), 3.17 (s, 3H).

PEG_3-benzimidazole: ^{1}H NMR (500 MHz, DMSO) δ 8.18 (d, *J* = 5.9 Hz, 1H), 7.64 (dd, *J* = 16.6, 7.9 Hz, 2H), 7.21 (ddd, *J* = 15.9, 11.1, 3.9 Hz, 2H), 4.40 (t, *J* = 5.2 Hz, 2H), 3.77 (t, *J* = 5.2 Hz, 2H), 3.54 – 3.47 (m, 2H), 3.47 – 3.39 (m, 4H), 3.39 – 3.34 (m, 2H), 3.21 (s, 3H).

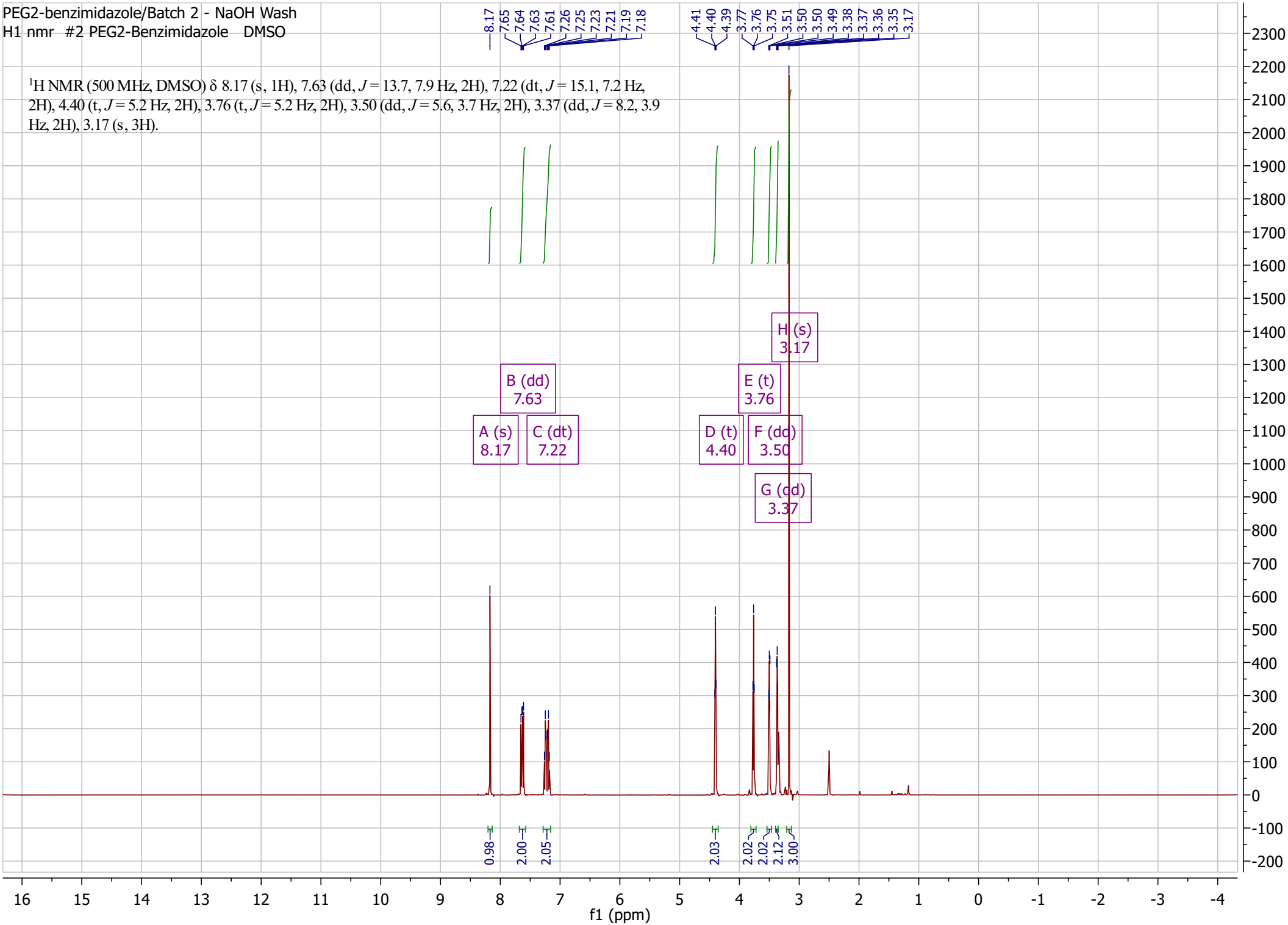
PEG1-benzimidazole/Cleaned
H1 nmr PEG-1--Benzimidazile DMSO--cleaned

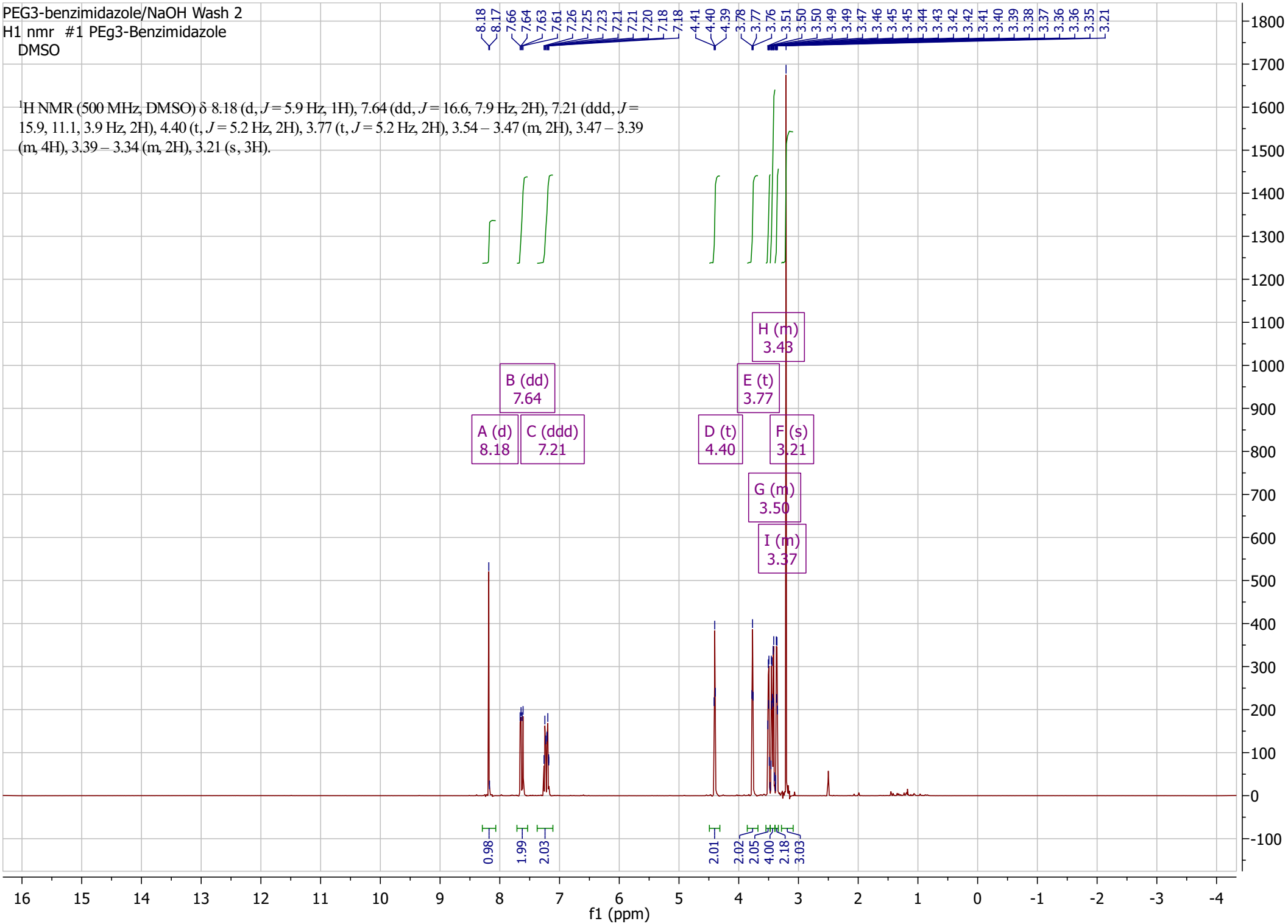
^{1}H NMR (500 MHz, DMSO) δ 8.16 (s, 1H), 7.63 (dd, J = 15.3, 7.9 Hz, 2H), 7.36 – 7.07 (m, 2H), 4.41 (t, J = 5.2 Hz, 2H), 3.68 (t, J = 5.2 Hz, 2H), 3.22 (s, 3H).



PEG2-benzimidazole/Batch 2 - NaOH Wash
H1 nmr #2 PEG2-Benzimidazole DMSO

^{1}H NMR (500 MHz, DMSO) δ 8.17 (s, 1H), 7.63 (dd, J = 13.7, 7.9 Hz, 2H), 7.22 (dt, J = 15.1, 7.2 Hz, 2H), 4.40 (t, J = 5.2 Hz, 2H), 3.76 (t, J = 5.2 Hz, 2H), 3.50 (dd, J = 5.6, 3.7 Hz, 2H), 3.37 (dd, J = 8.2, 3.9 Hz, 2H), 3.17 (s, 3H).



PEG3-benzimidazole/NaOH Wash 2
H1 nmr #1 PEg3-Benzimidazole
DMSO

^{1}H NMR (500 MHz, DMSO) δ 8.18 (d, J = 5.9 Hz, 1H), 7.64 (dd, J = 16.6, 7.9 Hz, 2H), 7.21 (ddd, J = 15.9, 11.1, 3.9 Hz, 2H), 4.40 (t, J = 5.2 Hz, 2H), 3.77 (t, J = 5.2 Hz, 2H), 3.54 – 3.47 (m, 2H), 3.47 – 3.39 (m, 4H), 3.39 – 3.34 (m, 2H), 3.21 (s, 3H).