

SUPPORTING INFORMATION

Catalyst-free reductive cyclization of bis(2-aminophenyl) disulfide with CO₂ in the presence of BH₃NH₃ to synthesize 2-unsubstituted benzothiazole derivatives

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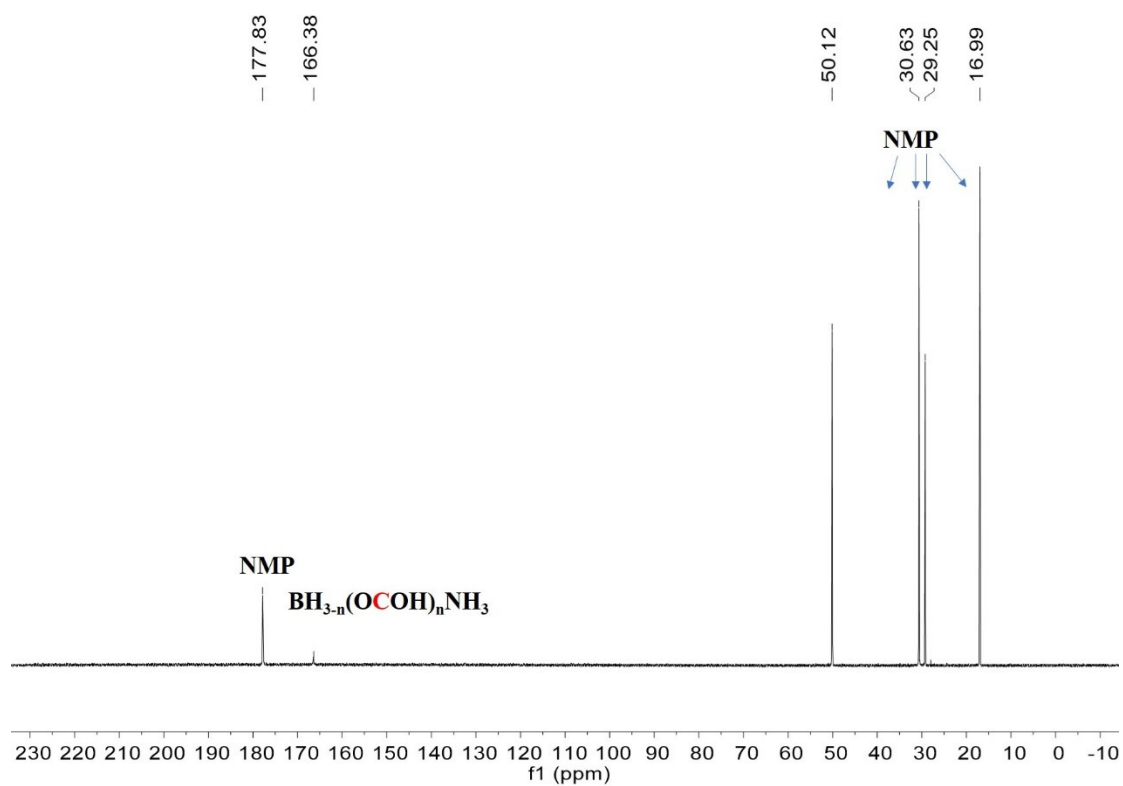
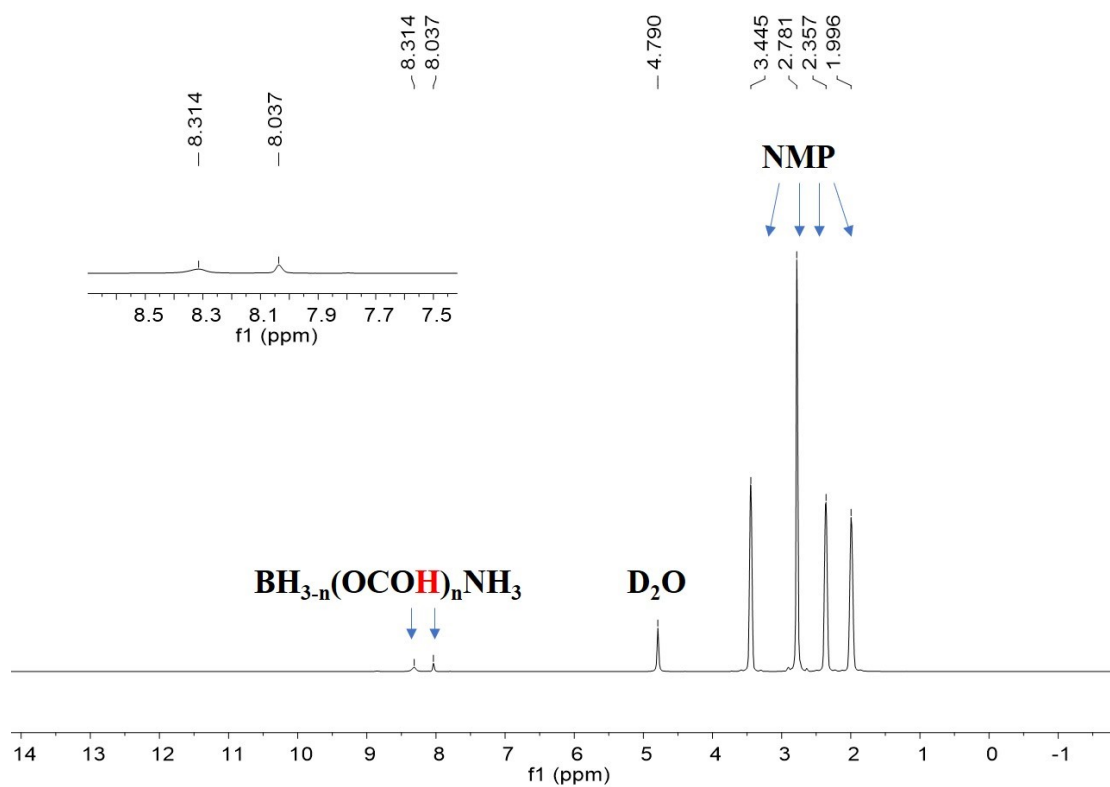
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1 The ^1H NMR of mechanistic study



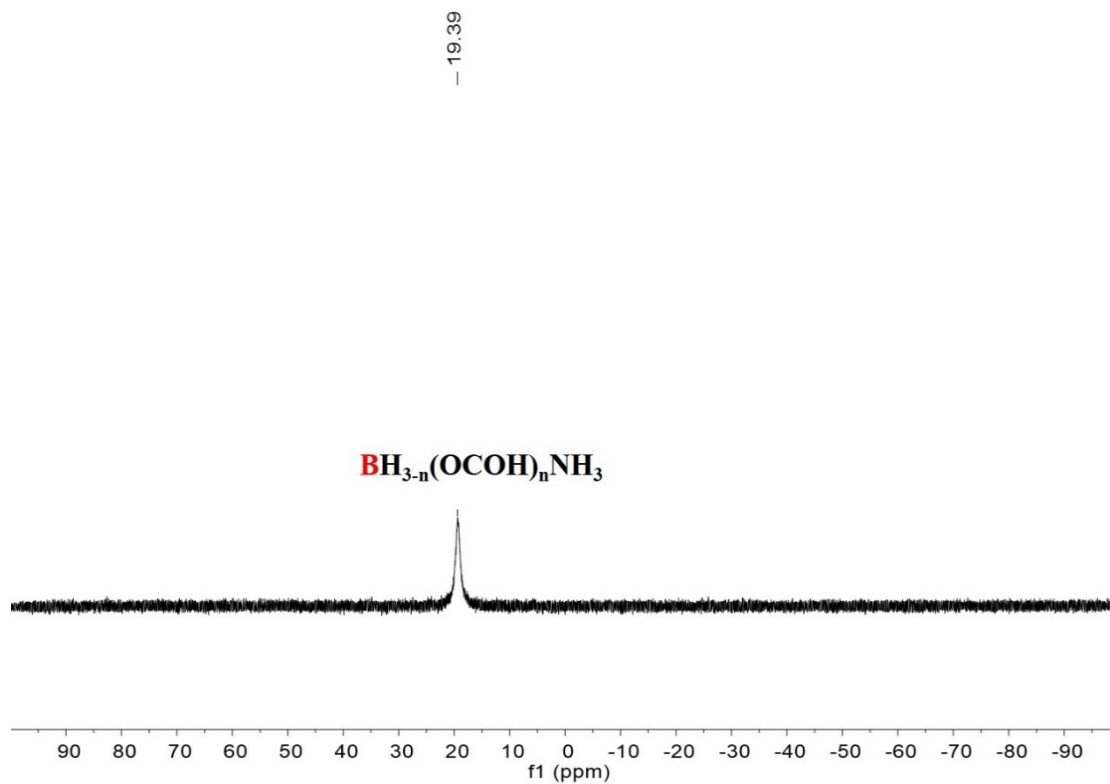


Fig. S1 The ¹H NMR, ¹³C NMR and ¹¹B NMR spectra for the reaction of BH₃NH₃ and CO₂ in NMP.

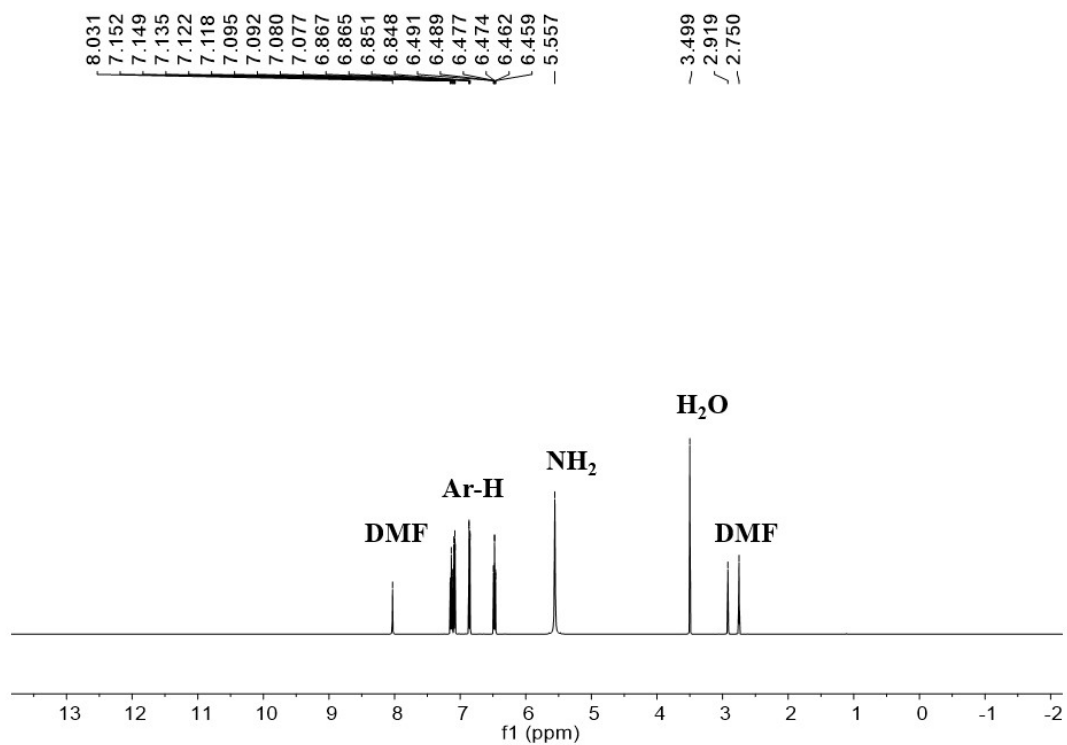


Fig. S2 The ¹H NMR spectra of the **1a** in deuterated DMF

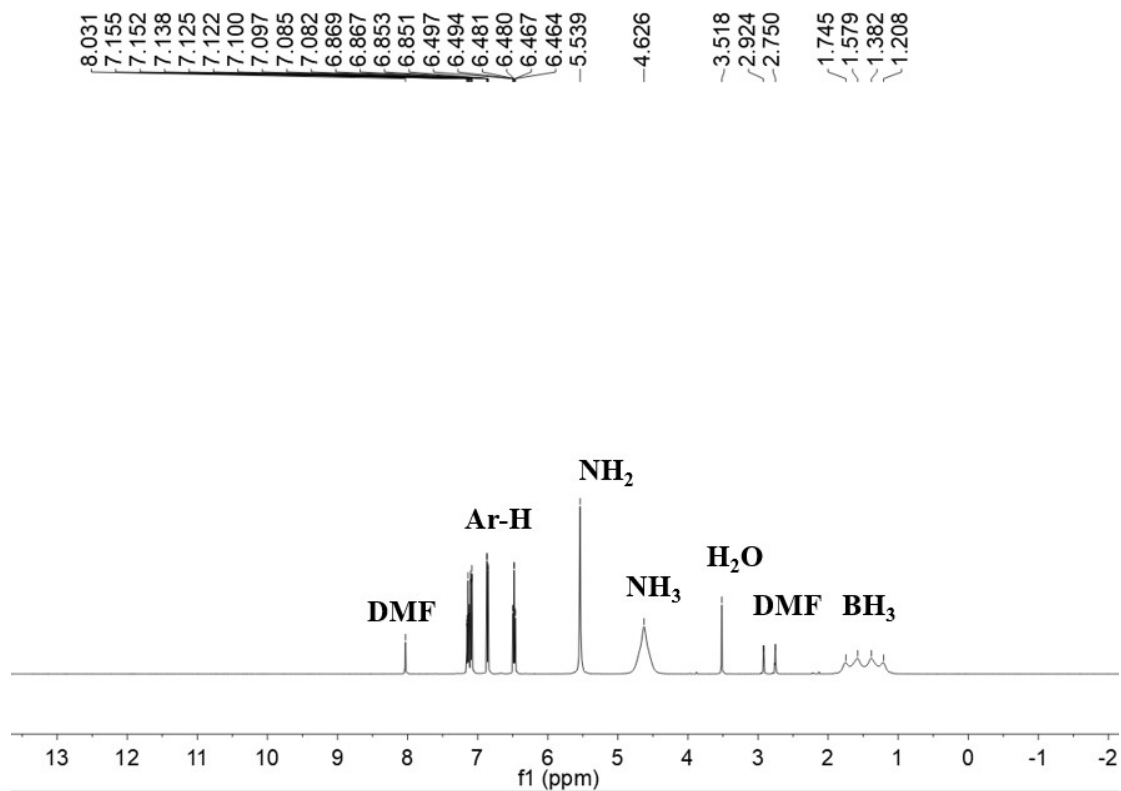


Fig. S3 The ¹H NMR spectra of the mixture of **1a** and BH₃NH₃ in deuterated DMF

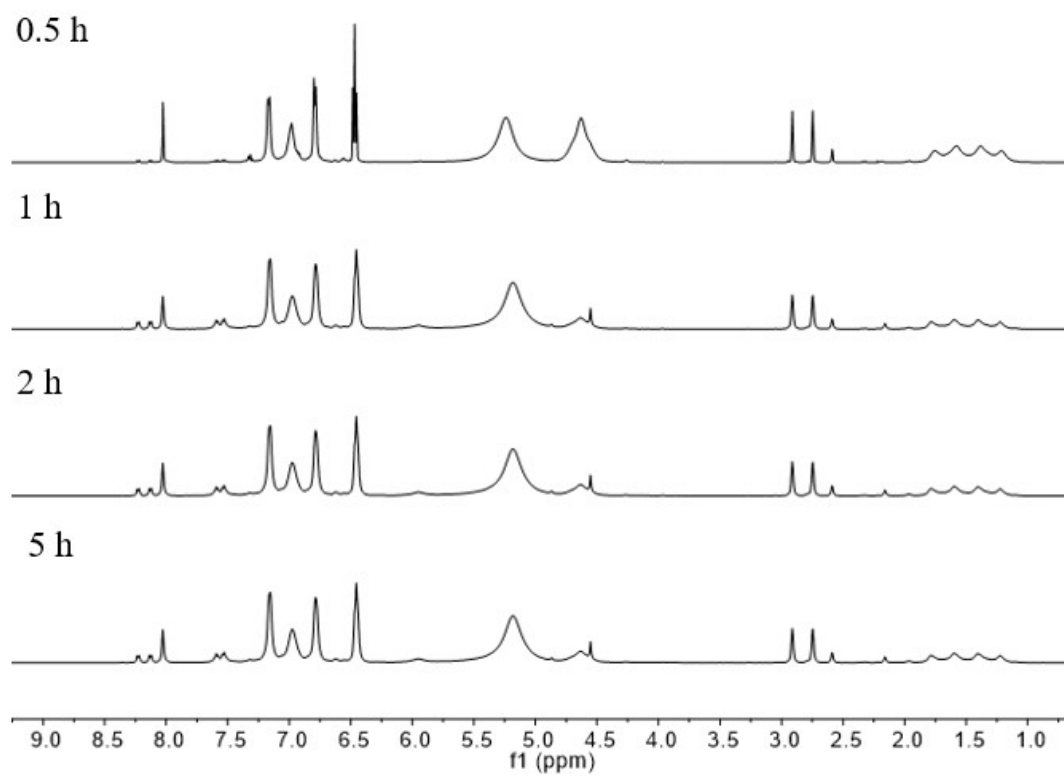


Fig. S4 The ¹H NMR spectra of the mixture solution of different time at 120 °C in deuterated DMF

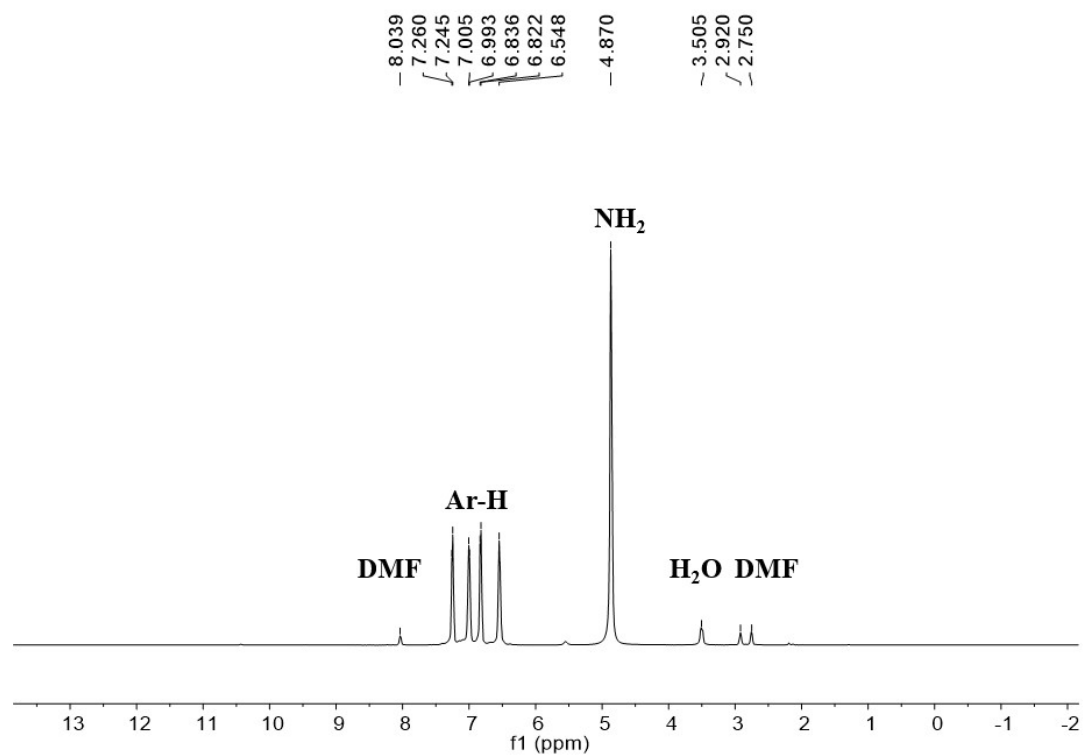


Fig. S5 The ¹H NMR spectra of the 2-aminothiophenol in deuterated DMF

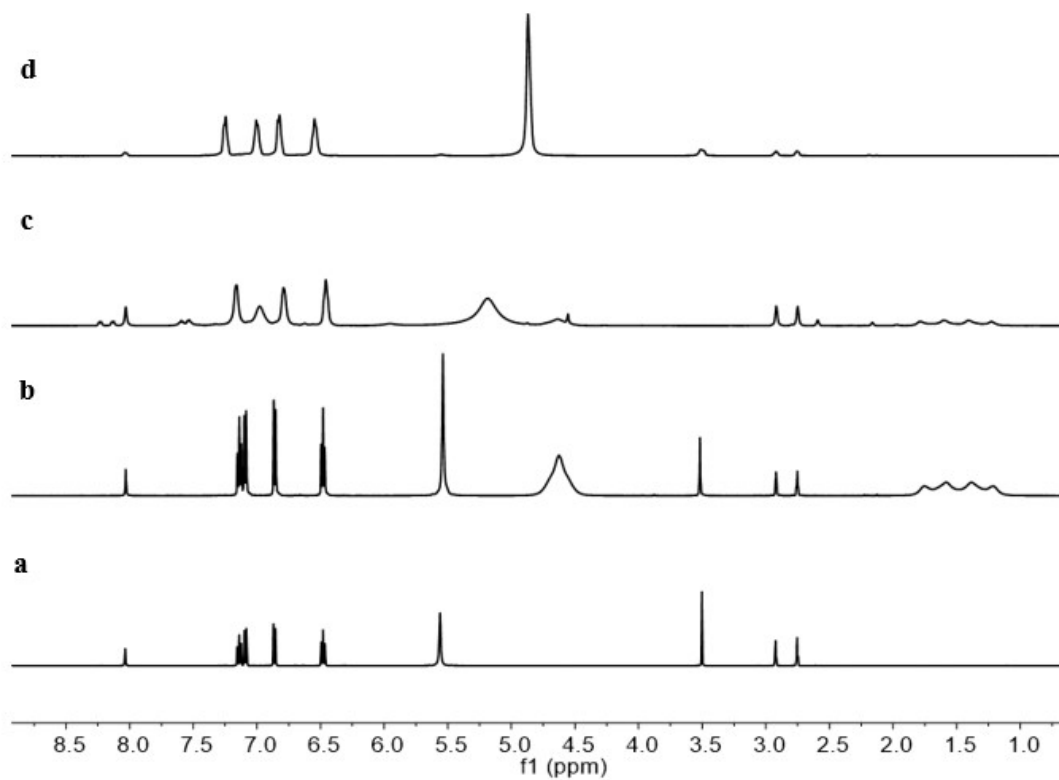


Fig. S6 The reaction of disulfide with BH₃NH₃ detected by ¹H NMR in deuterated DMF. a: disulfide **1a**, b: the mixture of disulfide **1a** and BH₃NH₃, c: the reaction of disulfide with BH₃NH₃ for 1h, d: 2-aminothiophenol.

2. ¹H and ¹³C NMR spectra of the products

