Electronic Supplementary Information for Dalton Transactions

N-Heterocyclic carbene stabilized adducts of alkyl magnesium amide, bisalkyl magnesium and Grignard reagents: Trapping oligomeric organo s-block fragments with NHCs

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Supporting Information

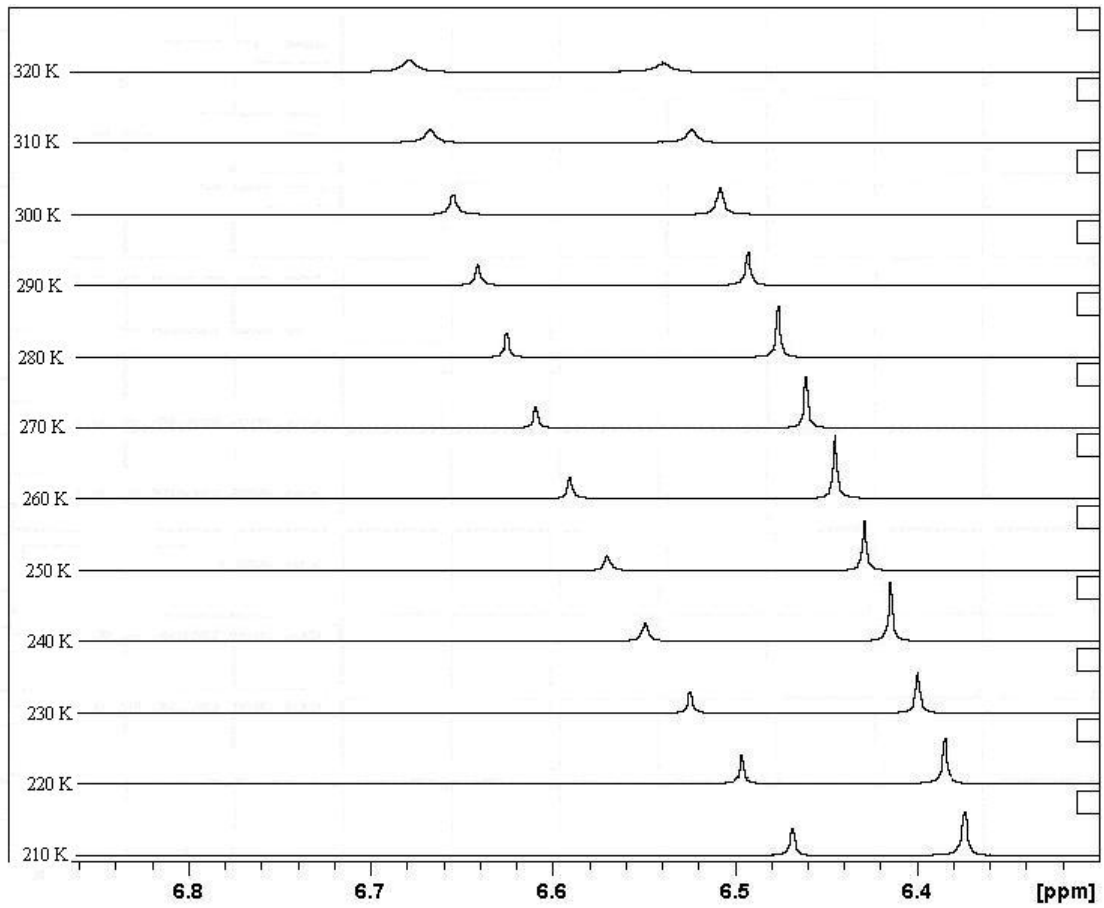

Figure S1 Variable temperature ^{1}H NMR spectrum of **1** in the region 6.3-6.9 ppm showing the olefinic resonance of free IPr (left) and coordinated IPr in ^{n}BuMg(TMP)·IPr (right)

Synthesis of [^{n}BuMg(HMDS)]$_2$

A solution of $^{n}Bu_2Mg$ (5.0 mL, 1 M, 5 mmol) and HMDS(H) (1.05 mL, 5.0 mmol) was stirred overnight in hexane. The volume was reduced *in vacuo* until a white precipitate started to develop. This was then heated to redissolve and stored overnight at -30^{o}C where a crop of colourless crystals (0.962 g, 80 %) developed. ^{1}H NMR (400.13 MHz, C_6D_6, 300 K): 0.05 (t, 2H, $^{2}J_{H,H}$ = 8 Hz, Mg-CH_2), 0.28 (s, 18H, $SiMe_3$), 1.17 (t, 3H, $^{2}J_{H,H}$ = 7 Hz, $CH_2CH_2\underline{CH_3}$), 1.66 (sex, 2H, $^{2}J_{H,H}$ = 7 Hz, $CH_2\underline{CH_2}CH_3$), 1.87 (quin, 2H, $^{2}J_{H,H}$ = 8 Hz, $\underline{CH_2}CH_2CH_3$). ^{13}C{^{1}H} NMR (100.58

MHz, C_6D_6, 300K): 5.2 ($SiMe_3$), 11.3 (Mg-CH_2), 14.3 ($CH_2CH_2\underline{CH_3}$), 31.7 ($CH_2\underline{CH_2}CH_3$), 32.3 ($\underline{CH_2}CH_2CH_3$). Anal. Calcd for $MgNSi_2C_{10}H_{27}$ (241.80): C, 49.67; H, 11.25; N, 5.79. Found: C, 49.12; H, 11.86; N, 5.04.

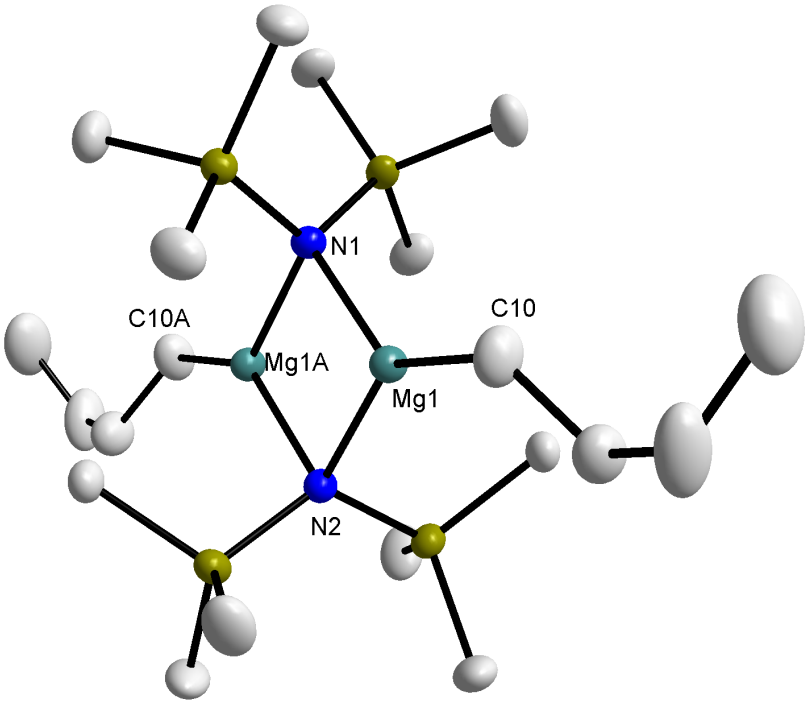

Figure S2 Molecular structure of [^{n}BuMg(HMDS)]$_2$ with selective atom labelling. Hydrogen atoms are omitted for clarity and thermal ellipsoids are displayed at the 50% probability level. Symmetry transformations used to generate equivalent atoms: -x, y, 0.5-z. Selected bond lengths (Å) and angles (^{o}): Mg1-N1 2.109(2), Mg1-N2 2.110(2), Mg1-C10 2.109(2), N1-Mg1-N2 93.15(3), N1-Mg1-C10 130.62(7), N2-Mg1-C10 135.76(7), Mg1-N1-Mg1A 86.89(2), Mg1-N2-Mg1A 86.81(2).

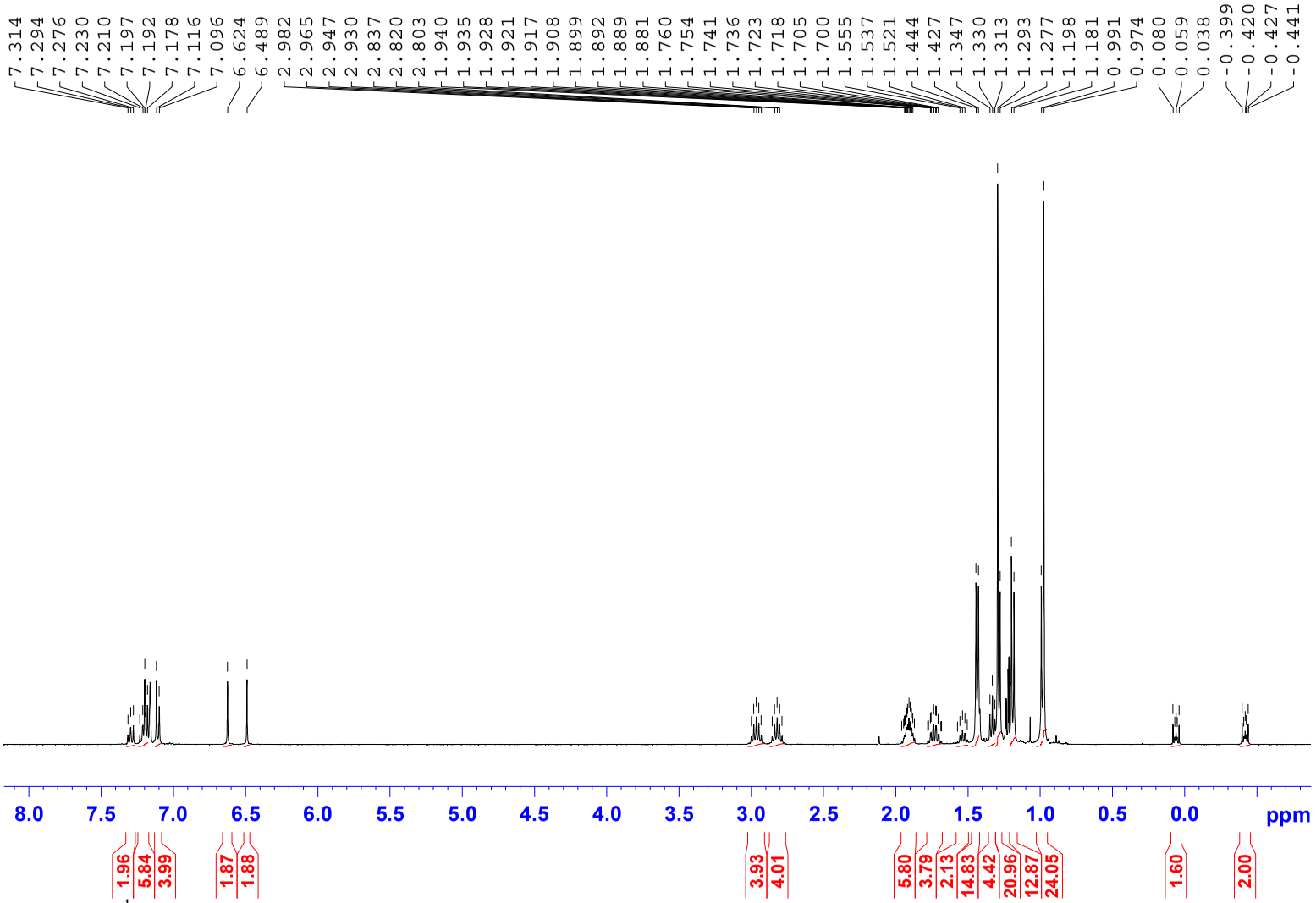

Figure S3 ^{1}H NMR spectrum of ^{n}BuMg(TMP)·IPr **(1)**

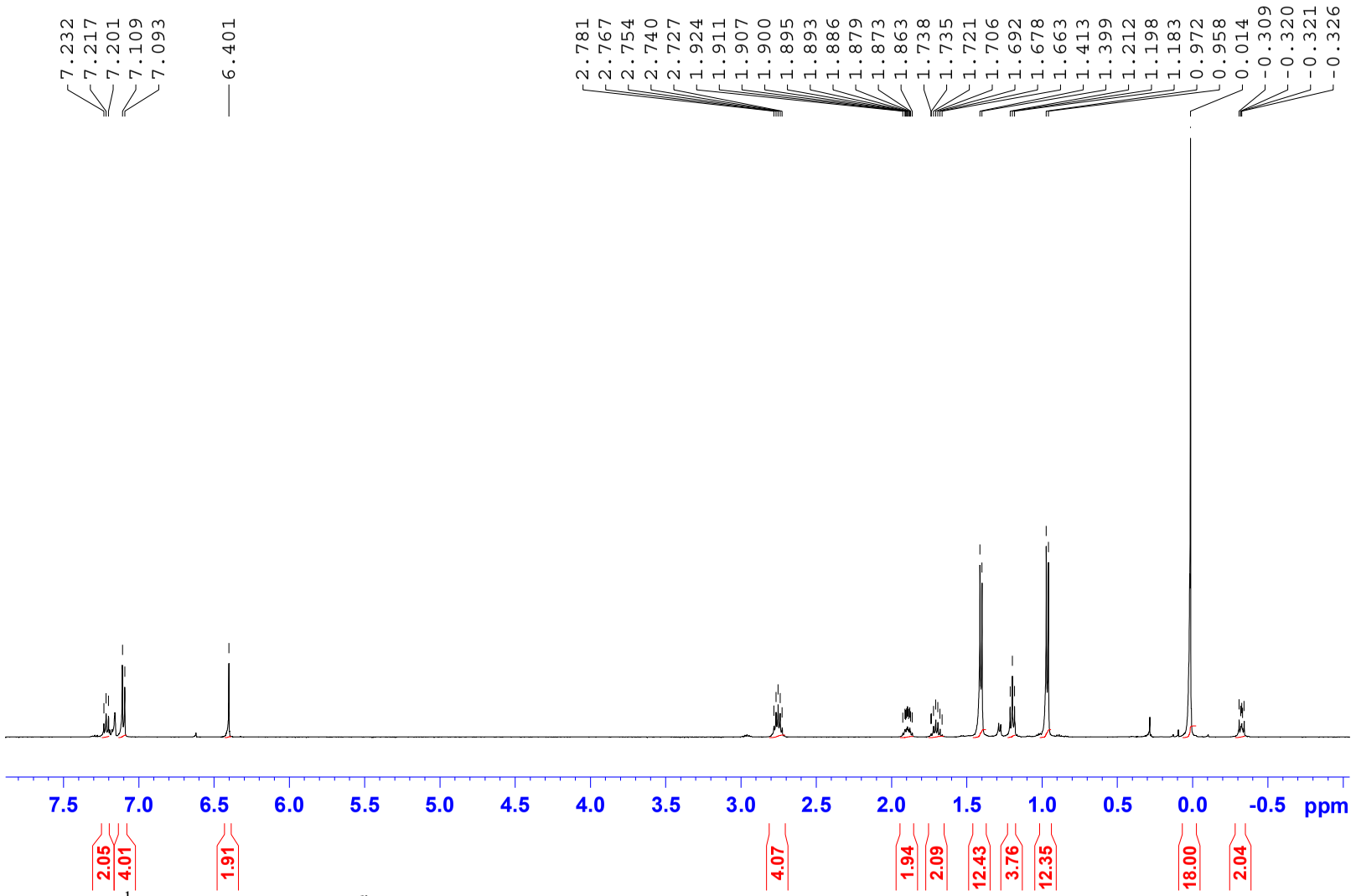

Figure S4 ^{1}H NMR spectrum of ^{n}BuMg(HMDS)·IPr **(2)**

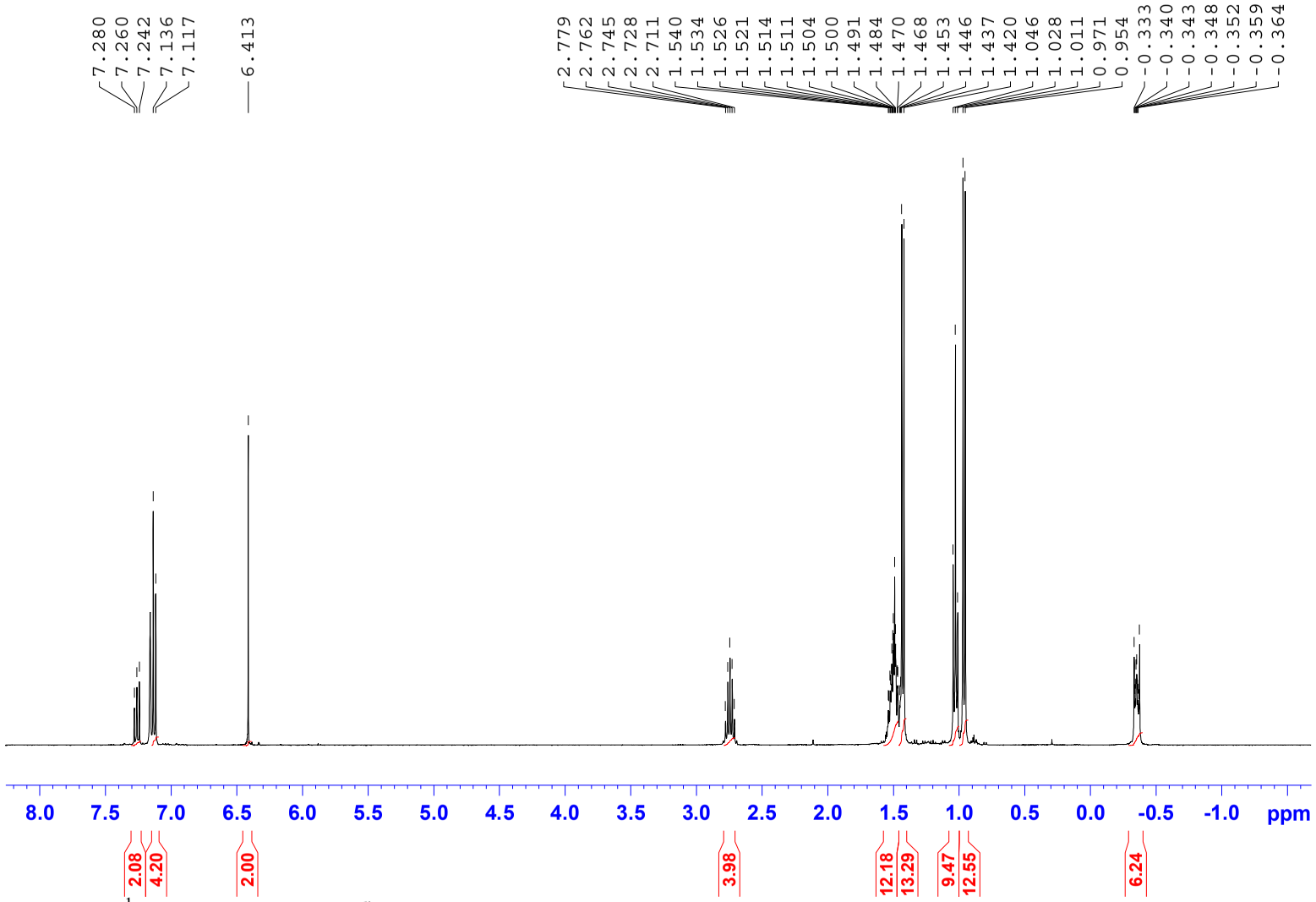

Figure S5 ^{1}H NMR spectrum of $^{n}Bu_3Al{\cdot}IPr$ **(3)**

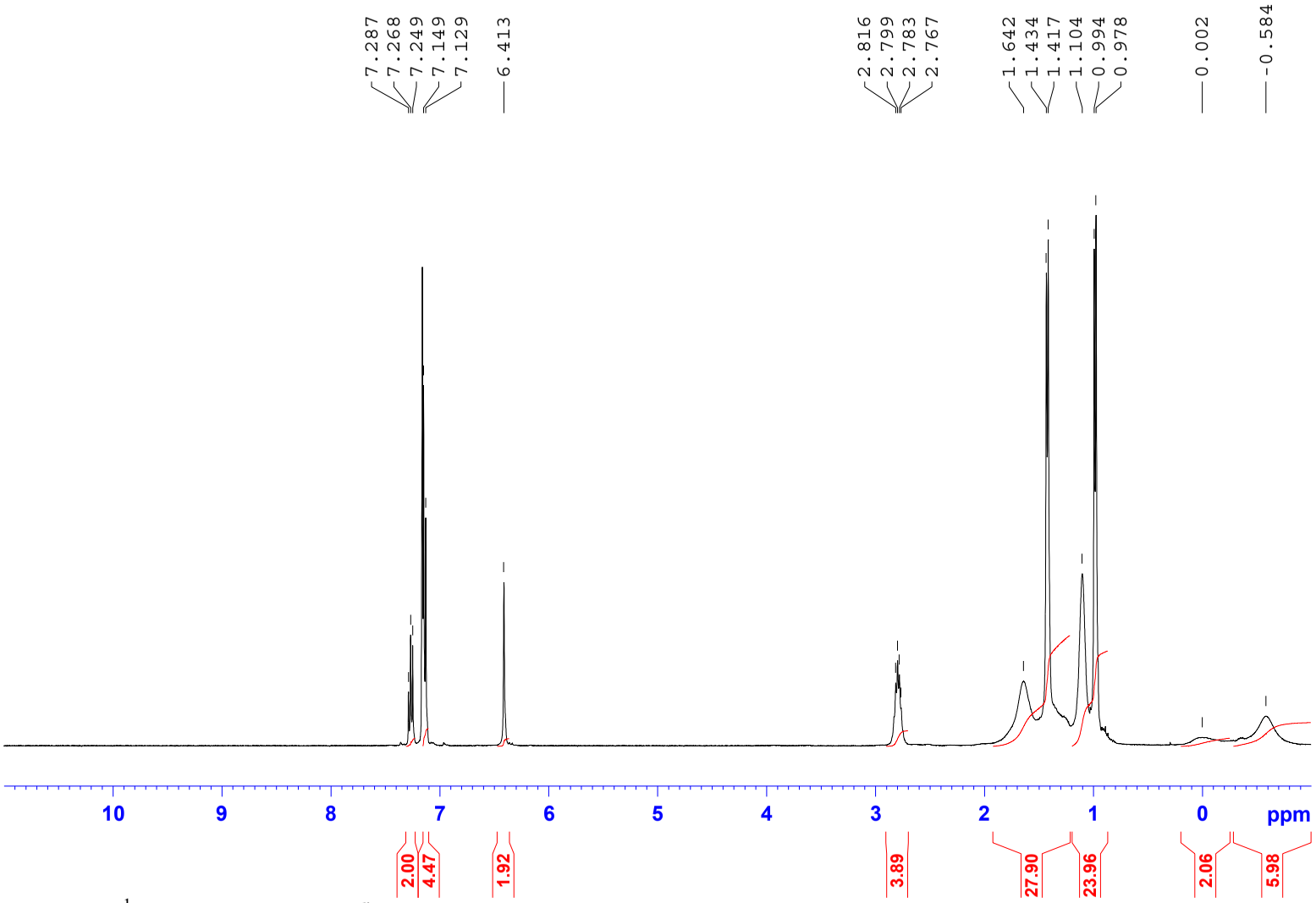

Figure S6 ^{1}H NMR spectrum of $^{n}Bu_8Mg_4 \cdot 2IPr$ **(4)**

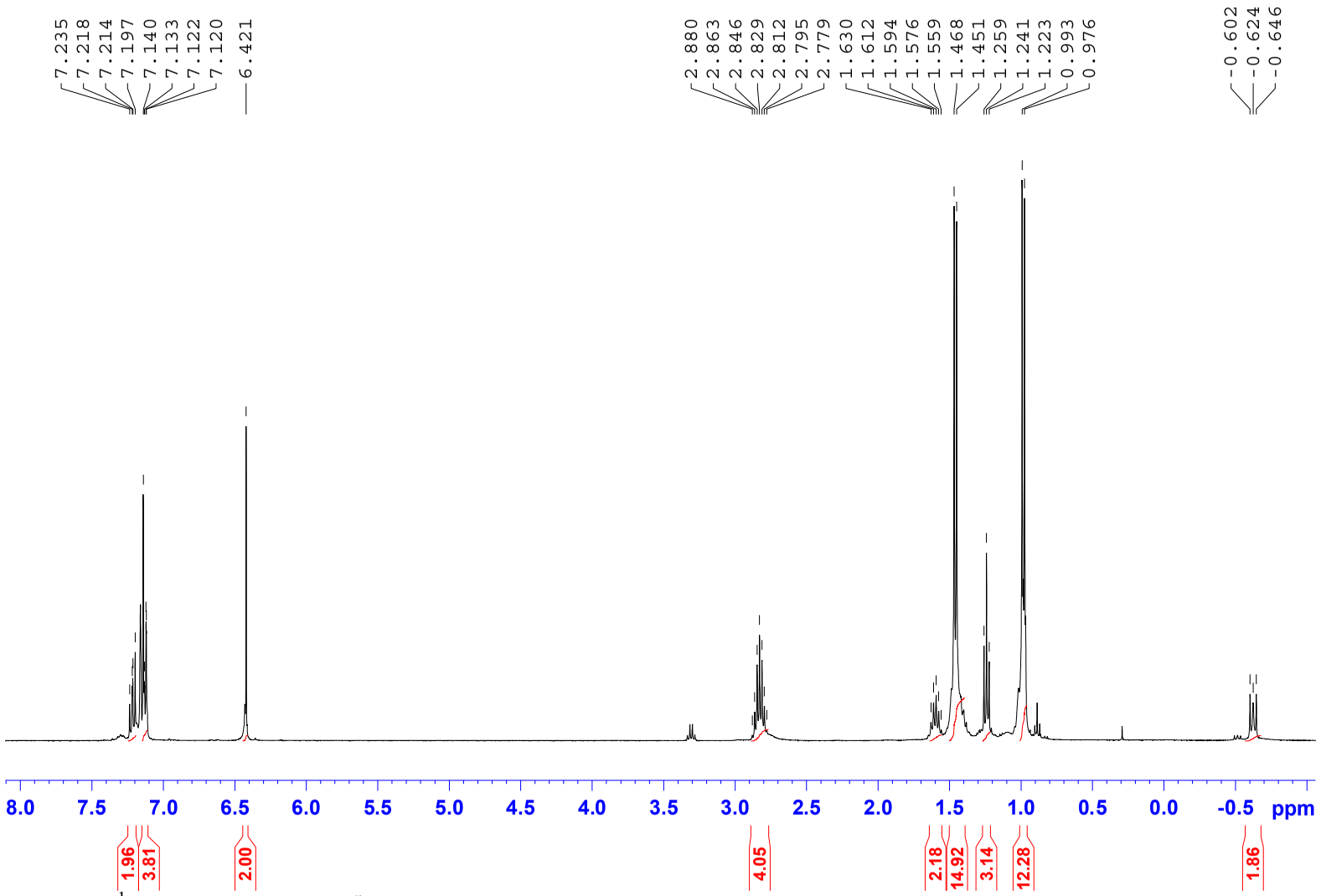

Figure S7 ^{1}H NMR spectrum of ^{n}BuMgCl·IPr **(5)**