Electronic Supplementary Material (ESI) for Catalysis Science & Technology.

Supporting Information

for

Asymmetric reductive amination by a wild-type amine dehydrogenase from the thermophilic bacteria *Petrotoga mobilis*

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1. Figure S1

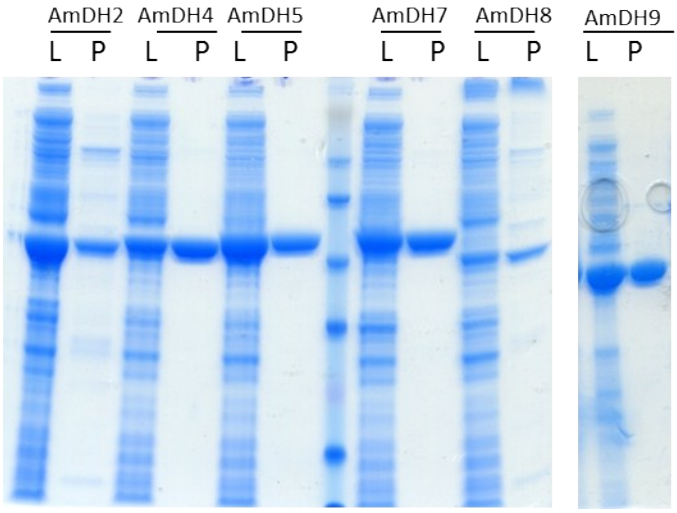

Figure S1. His-tag purification of AmDHs. L: cell free extract, P: pure protein elution fraction

2. Figure S2

Figure S2. Heat treatment purification of AmDH4. L: cell free extract, P: purified enzyme (clarified enzyme solution after heat treatment and centrifugation)

3. Figure S3

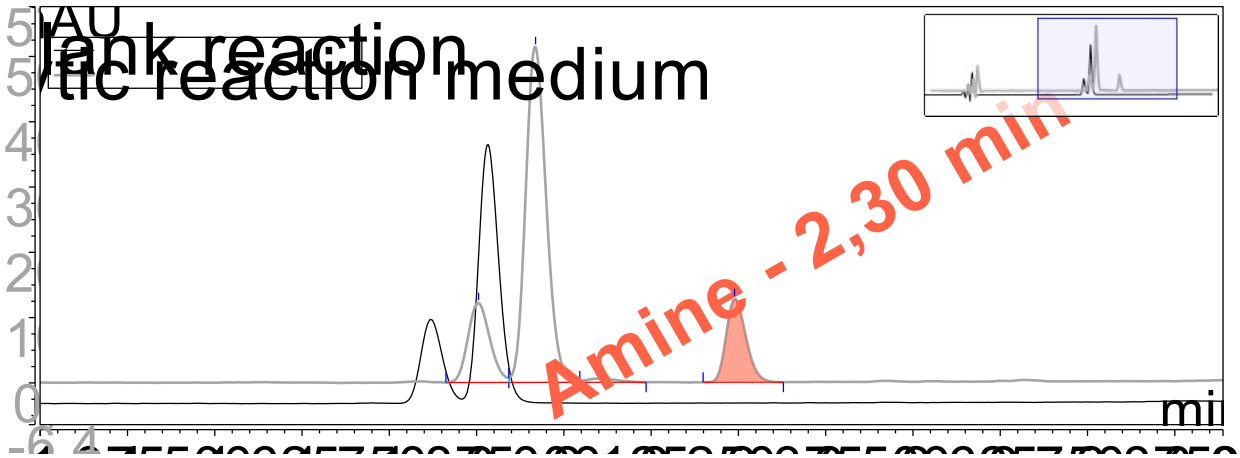

Figure S3. UHPLC Chromatogram of the DNFB-derivatized mixture of AmDH4-catalyzed amination of 4-ketopentanoic acid (**6**) to 4-aminopentanoic acid (**9**) a) reaction medium b) blank reaction without enzyme AmDH4 (UHPLC conditions A).

4. Figure S4

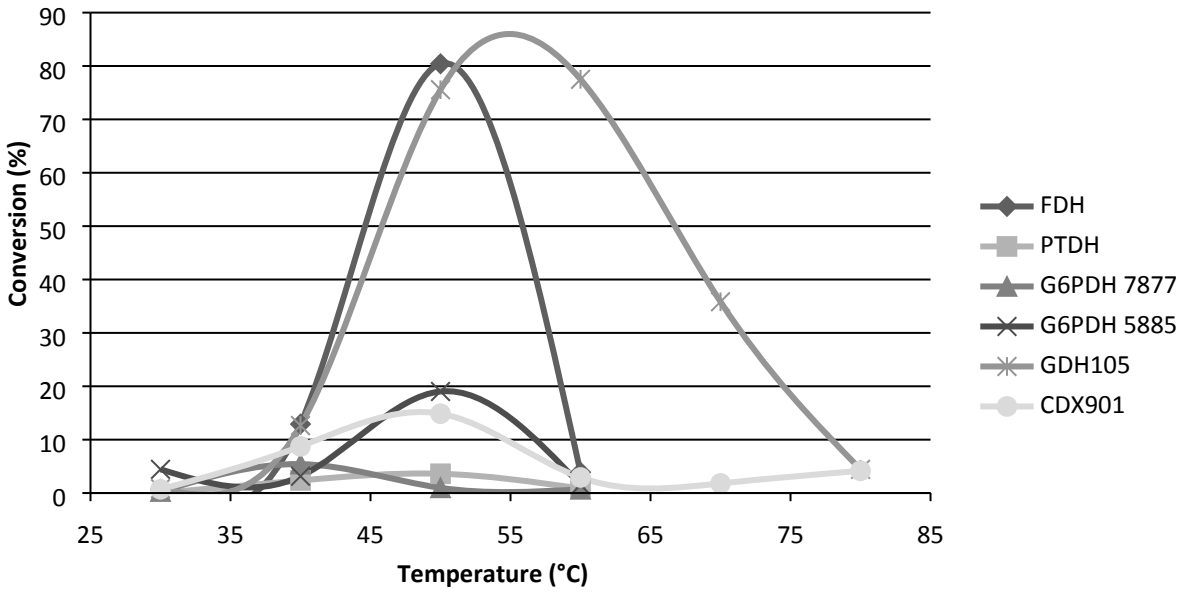

Figure S4: Conversions obtained with various cofactor recycling system. Reactions conditions: 4-oxopentanoic acid (**6**) 10 mM, NADH 0.4 mM, NH_4Cl 200 mM, $NaHCO_3/Na_2CO_3$ buffer 100

mM pH 9.5, AmDH4 0.1 mg/mL, cofactor recycling enzyme 3U/ml, coenzyme substrate 20 mM, 48h.

5. Figure S5

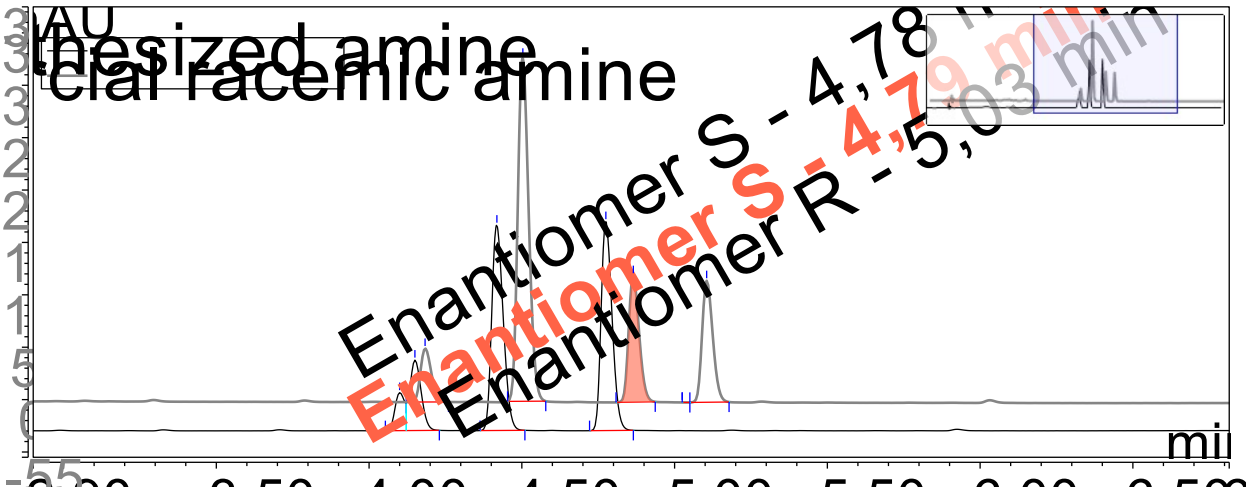

Figure S5. UHPLC Chromatogram obtained from FDAA derivatization of a) synthetized (*4S*)-4-aminopentanoic acid (**9**), b) commercial racemic amine rac-**9** (UHPLC conditions B).

6. Figure S6

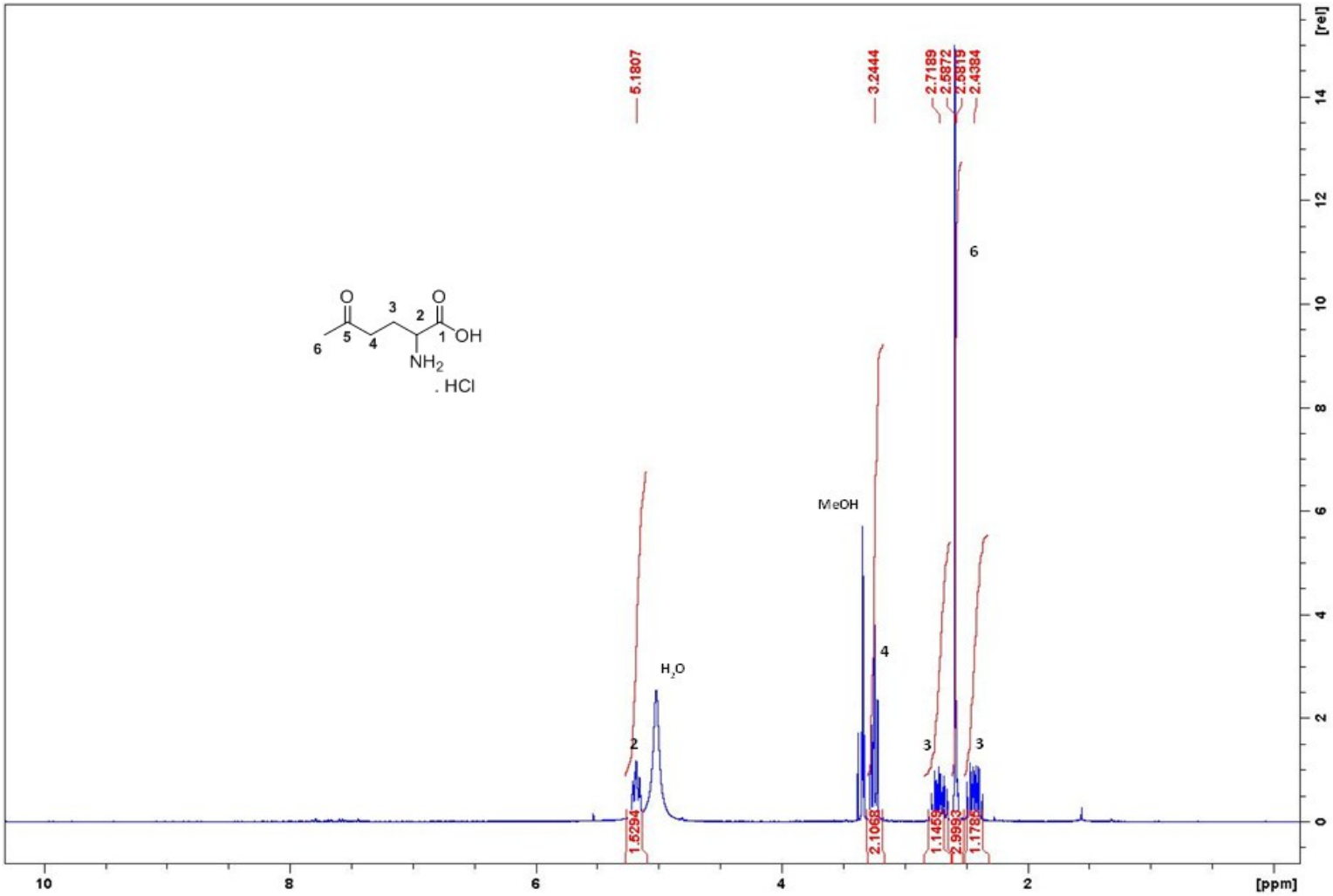

Figure S6. ^{1}H NMR spectrum of rac-**3**

7. Figure S7

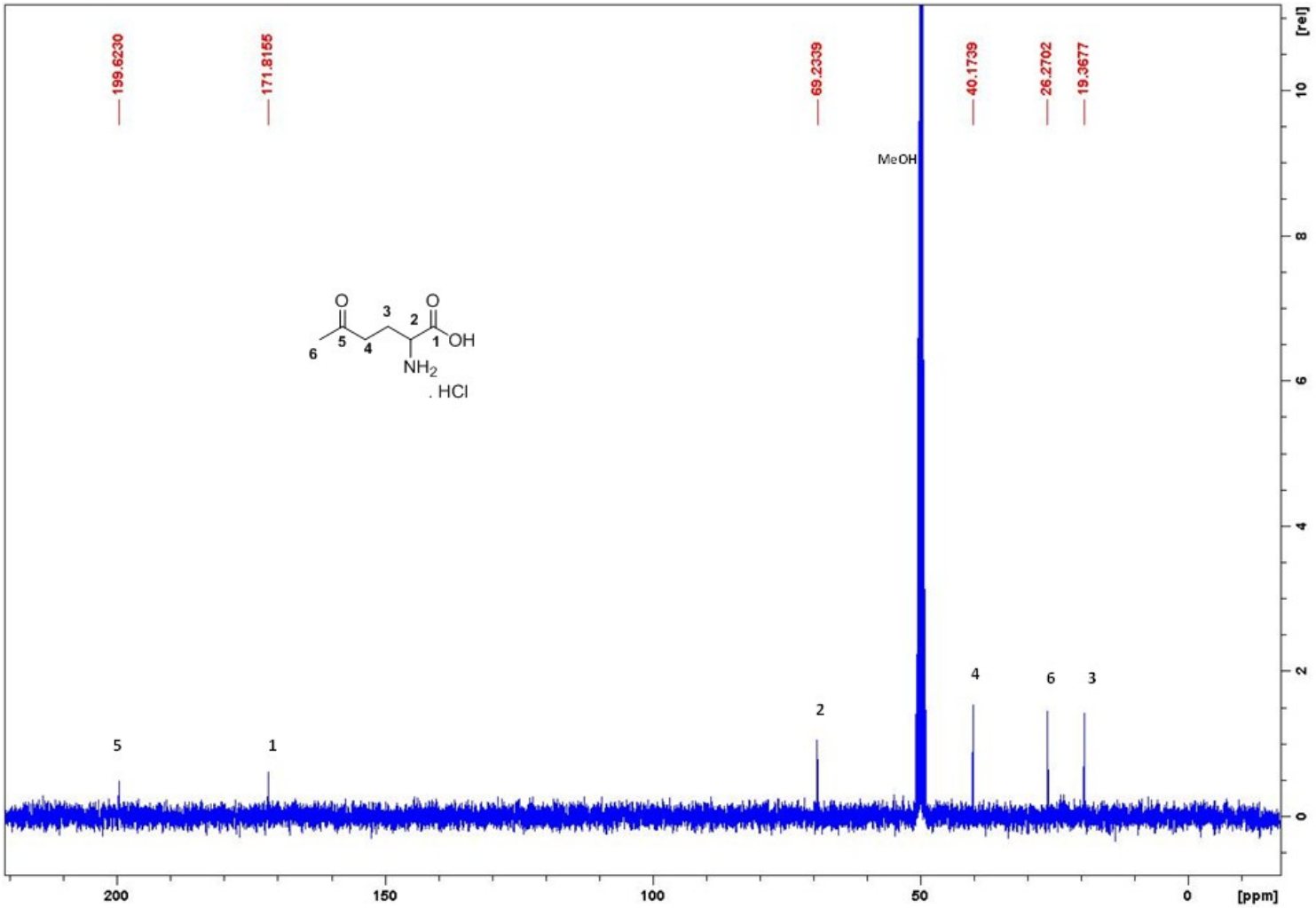

Figure S7. ^{13}C NMR spectrum of rac-**3**

8. Figure S8

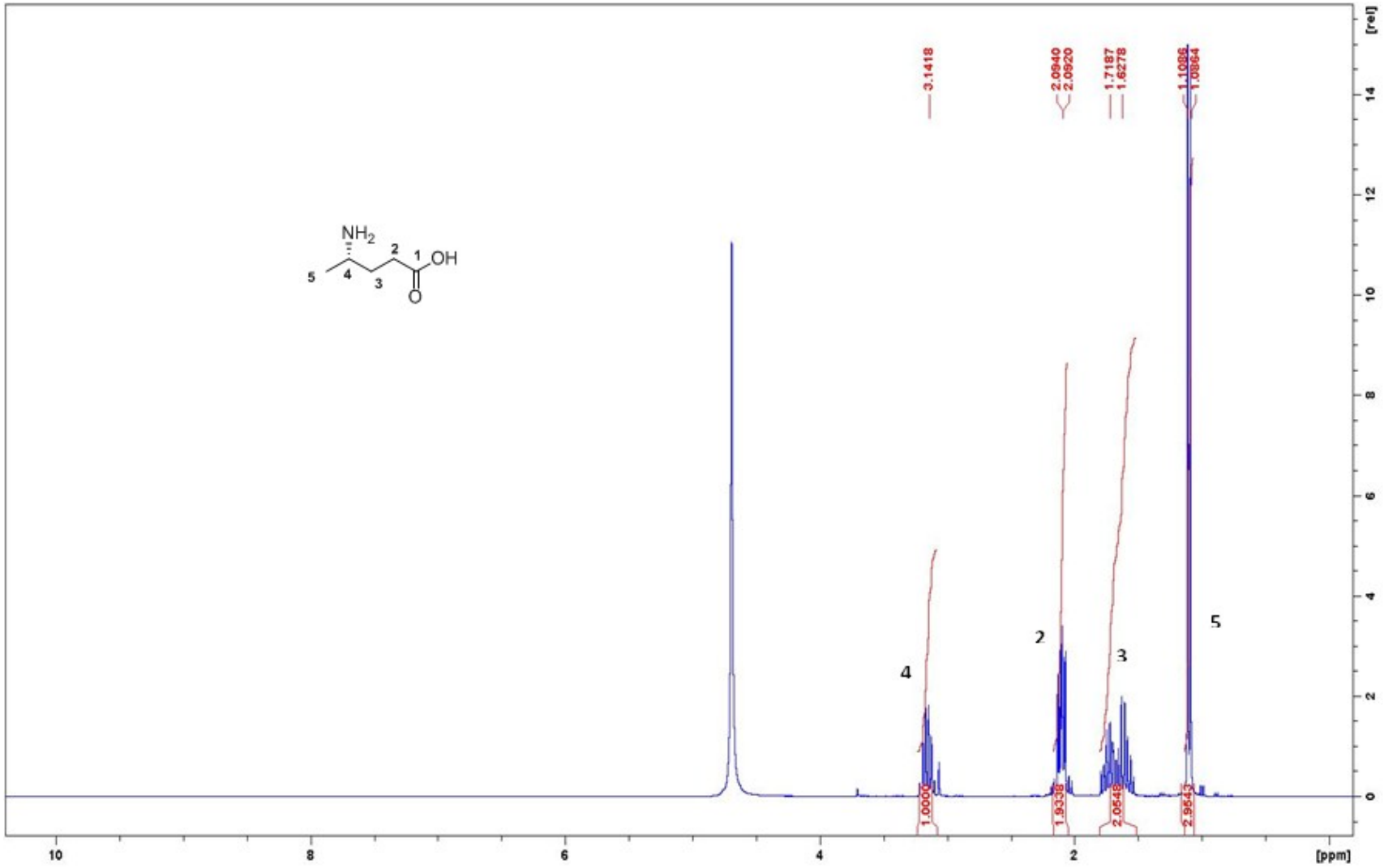

Figure S8. ^{1}H NMR spectrum of (*4S*)-**9**

9. Figure S9

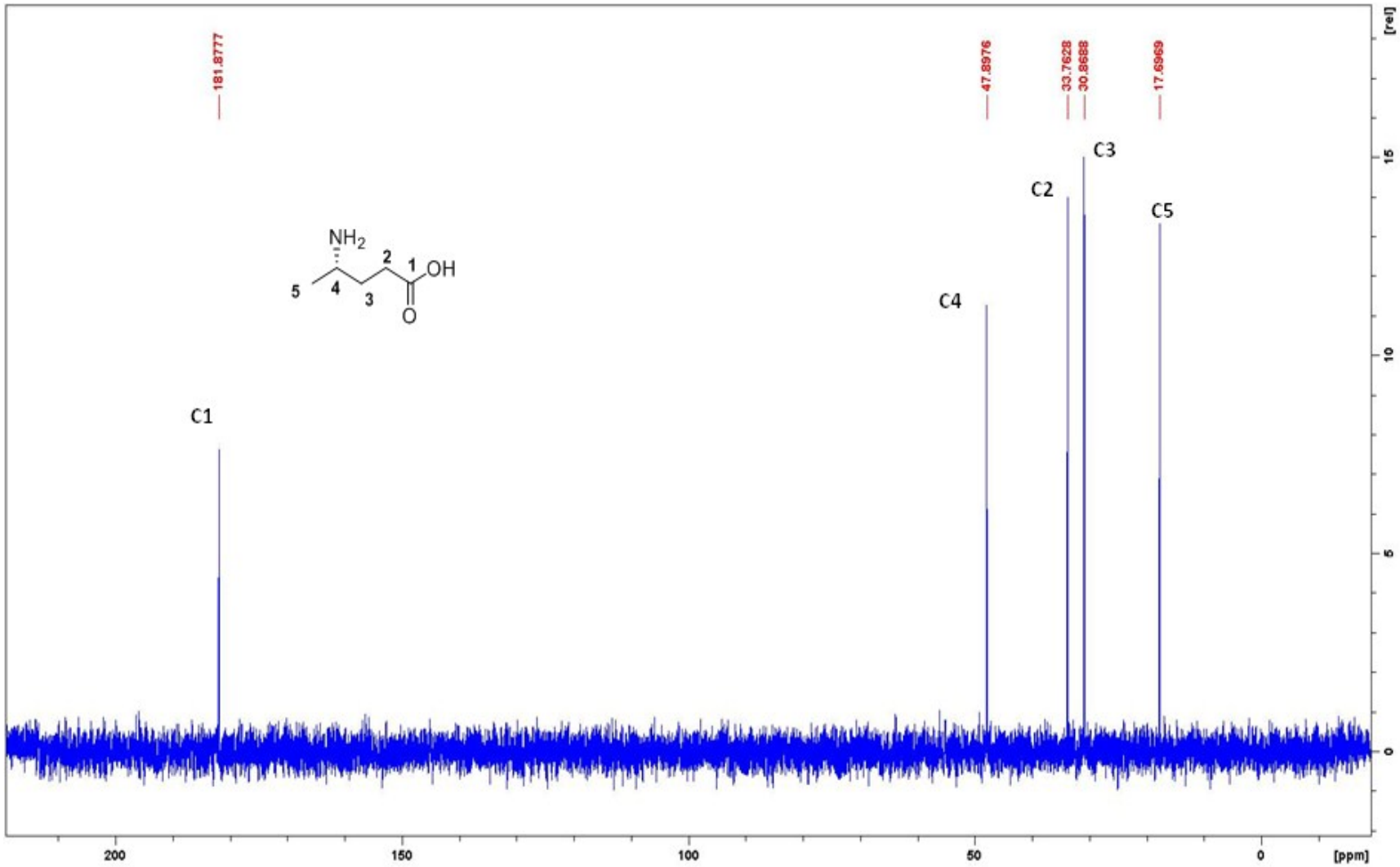

Figure S9. ^{13}C NMR spectrum of (*4S*)-**9**