Supporting information

1. Experimental details

1.1. Materials

All materials were used as obtained commercially.

1.2. Product analysis and identification

Crude reaction mixtures were analyzed by gas chromatography (GC) (quantitative, internal standard in the reaction mixture) and nuclear magnetic resonance (NMR) spectroscopy (qualitative; amine, amide, carboxylic acid region between 2.0 and 3.0 ppm). NMR samples were prepared by mixing 300 µL of the reaction mixture with 300 µL methanol-d4. ^{1}H-NMR spectra, as well as ^{1}H,^{1}H-COSY and ^{1}H,^{13}C-HSQC spectra, were recorded on a Bruker Ascend 400 MHz spectrometer equipped with a BBO 5 mm atma probe and a sample case. One of the signals of CPME was suppressed by applying an adapted zgpr pulse program: p1 9.75 µs; plw1 15W; plw9 5.7-05W; o1P on the resonance signal of CPME (around 3.27 ppm). Besides GC and NMR, the products were also identified by gas chromatography coupled to mass spectrometry (GC-MS) with an Agilent 6890 GC, equipped with a HP-5ms column, coupled to a 5973 MSD mass spectrometer.

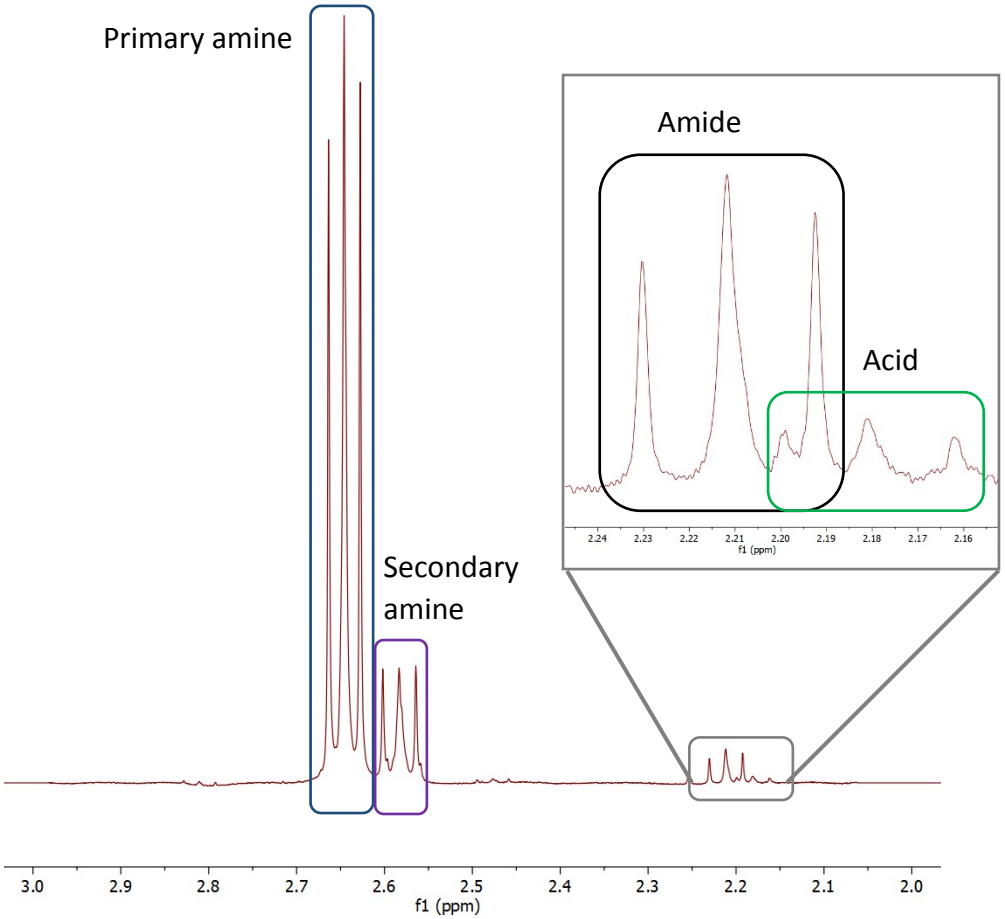


Figure S 1 – ^{1}H NMR spectrum of reaction mixture after reductive amination of octanoic acid

1.3. Catalyst synthesis and characterization

The catalysts were prepared as described by Coeck *et al.* (2019).[1] Although the catalyst was already characterized extensively, additional inductively coupled plasma optical emission spectrometry measurements (ICP-OES) were performed to check the catalysts' stability. Possible Ru, W and Mg leaching was measured by ICP using a Varian 720-ES with the Varian SPS3 sample preparation system and applying the calibration curve method. For 1 mL of the supernatant of the reaction mixture, the solvent was evaporated and residual ions were redissolved in 20 mL aqua regia.

1.4. NH_3- and CO_2-TPD measurements

Ammonia (NH_3) and carbon dioxide (CO_2) temperature programmed desorption (TPD) experiments were performed using a Quantachrome ChemBET pulsar equipped with a TCD. Prior to each measurement, the catalyst (300 mg) was dried at 450 °C for 1 h under flowing He (20 mL/min) and cooled to 30 °C. The catalyst was then exposed to either NH_3 or CO_2 (20 mL/min) for 45 min, followed by purging the physisorbed NH_3 and CO_2 with He for 1 h. Finally, the catalyst was heated gradually (10 °C/min) in a He flow (20 mL/min).

2. Dehydration of ammonium octanoate

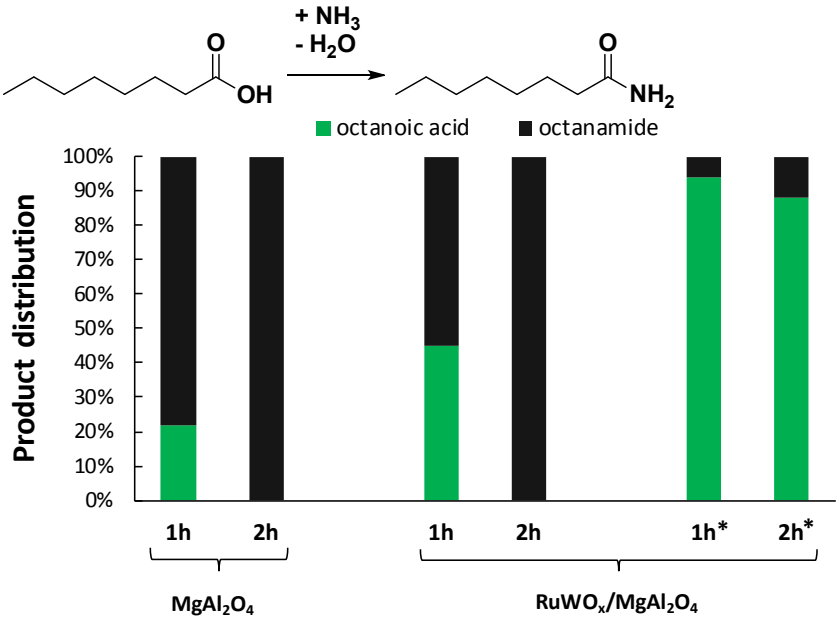


Figure S 2 – Dehydration of ammonium octanoate with $RuWO_x/MgAl_2O_4$ (left) and pure $MgAl_2O_4$ (right). The dehydration occurs faster with the pure $MgAl_2O_4$, due to a partial coverage of $MgAl_2O_4$ with $RuWO_x$. Reaction conditions: octanoic acid (1 mmol), 200°C, 6 bar NH_3, no additional H_2, 0.126 g catalyst, undecane (20 µL), CPME (10 mL). *reaction performed in dimethoxyethane, with 3 bar NH_3 (at 3 bar an equal amount of NH_3 is dissolved in comparison with 6 bar NH_3 over CPME)

3. Influence of low quantities of water

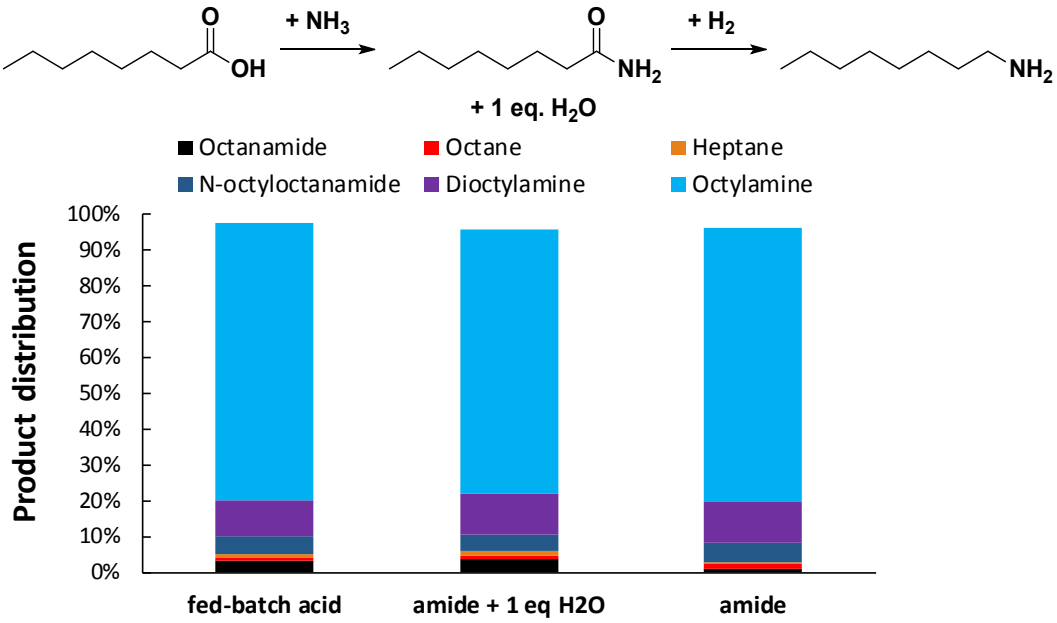


Figure S 3 – Synthesis of octylamine from octanoic acid (left, fed batch, initial 2h with 6 bar NH_3), octanamide with 1 eq. water (middle) and octanamide (right, no addition of water). Reaction conditions: substrate (1 mmol), 200°C, 6 bar NH_3, 50 bar H_2, 5 mol% Ru (4 wt% Ru on $RuWO_x/MgAl_2O_4$), undecane (20 µL), CPME (10 mL).

4. Recycling and characterization of catalyst

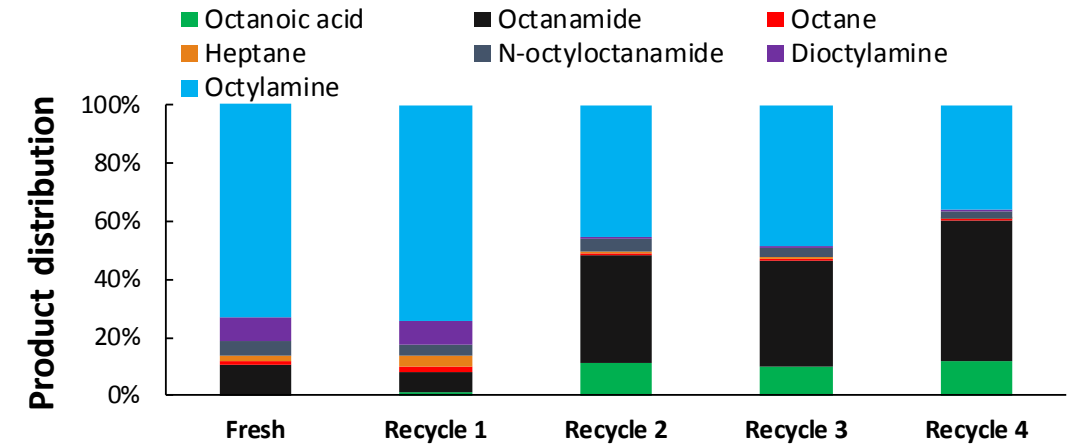


Figure S 4 – Recycling test of $RuWO_x/MgAl_2O_4$. Reaction conditions: octanoic acid (1 mmol), 200°C, 6 bar NH_3, 50 bar H_2, 5 mol% Ru (4 wt% Ru on $RuWO_x/MgAl_2O_4$), undecane (20 µL), CPME (10 mL), for 4 h.

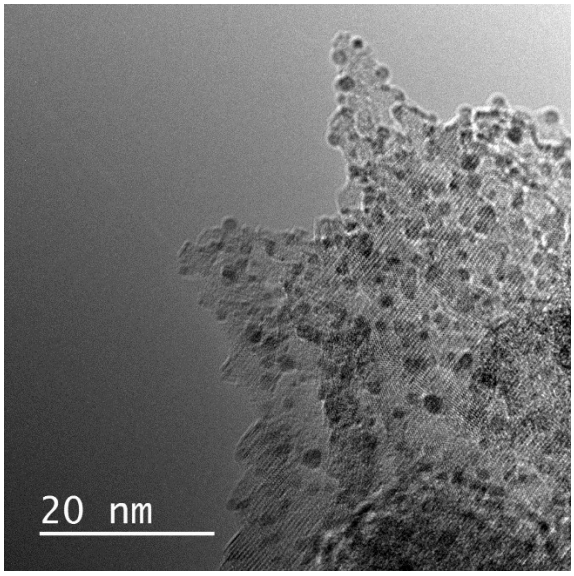


Figure S 5 – TEM images of $RuWO_x/MgAl_2O_4$ catalyst (black dots are Ru particles).

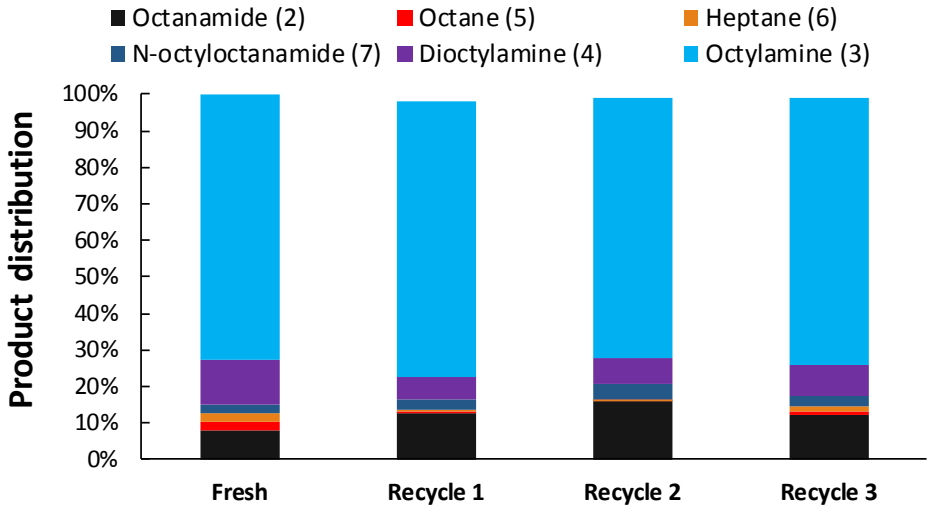


Figure S 6 – Recycling test of $RuWO_x/ZrO_2$. Reaction conditions: fed-batch reaction, octanoic acid (1 mmol), 200°C, 6 bar NH_3 (initial 2 h), 6 bar NH_3 + 50 bar H_2 (5 h), 7.5 mol% Ru, undecane (20 µL), CPME (10 mL).

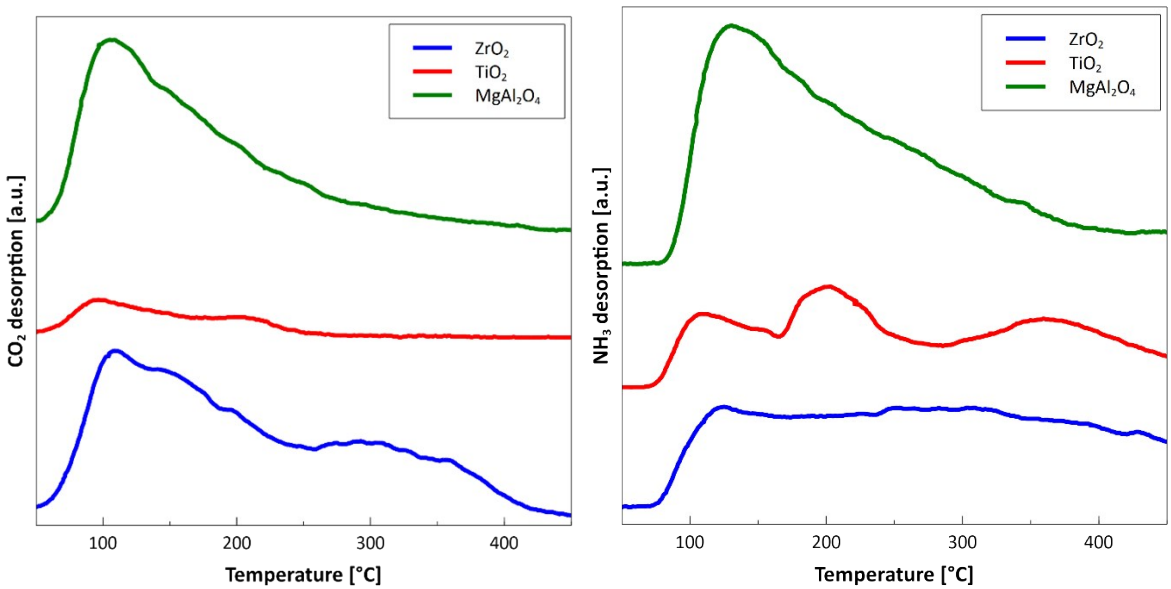


Figure S 7 – TPD experiments for ZrO_2, TiO_2 and $MgAl_2O_4$. CO_2 desorption (left) and NH_3 desorption (right) normalized by the weight of the materials.

Table S 1 – Acidic and basic properties of ZrO_2, TiO_2 and $MgAl_2O_4$ as determined by TPD experiments.

Support	BET surface [a] [m²/g]	Acid amount [b] [µmol/g]	Base amount [c] [µmol/g]	Acid density [d] [µmol/m²]	Base density [d] [µmol/m²]
ZrO_2	25	140.7	106.8	5.6	4.3
TiO_2	50	95.1	16.1	1.9	0.3
$MgAl_2O_4$	177	173.7	97.8	1.0	0.6

[a] Specific surface area determined by N_2 physisorption or specified by the supplier. [b] Amount of acidic sites determined by NH_3-TPD. [c] Amount of basic sites determined by CO_2-TPD. [d] Density of sites determined via TPD results and specific surface area of the support.

5. Substrate scope investigation

Table S 2 – Full list of substrate scope investigation

Substrate	Products distribution (yield)
Butyric acid	Butylamine (80%), Dibutylamine (5%), Butyramide (6%), *N*-Butylbutyramide (4%)
Hexanoic acid	Hexylamine (75%), Dihexylamine (13%), Pentane (1%), Hexane (1%), Hexanamide (1%), *N*-Hexylhexanamide (6%), Hexylhexanoate (1%), *N*-Hexylcyclopentanamine (1%)
Octanoic acid	Octylamine (76%), Dioctylamine (8%), Octanamide (5%), Octane (2%), *N*-Octyloctanamide (4%), Heptane (4%)
Methyl octanoate	Octylamine (73%), Dioctylamine (13%), Octanamide (5%), Octane (1%), *N*-Octyloctanamide (7%), *N*-Octyloctanoaat (1%).
Undecylenic acid	Undecylamine (70%), Diundecylamine (7%), Undecanamide (13%), *N*-Undecylundecanamide (6%), *N*-Undecylcyclopentanamine (1%), Decane (1%),
Lauric acid	Dodecylamine (74%), Didodecylamine (15%), Dodecanamide (3%), *N*-Dodecyldodecanamide (5%), Undecane (1%), Dodecane (1%), *N*-Dodecylcyclopentanamine (1%)
Myristic acid	Tetradecylamine (70%), Ditetradecylamine (20%), Tetradecane (1%), Tridecane (1%), *N*-Tetradecyltetradecanamide (6%), *N*-Tetradecylcyclopentanamine (2%)
3,5,5-Trimethylhexanoic acid	3,5,5-Trimethylhexylamine (60%), 3,5,5-Trimethylhexanamide (21%), 3,5,5-Trimethyl-*N*-(3,5,5-trimethylhexyl)hexanamide (1%), Bis(3,5,5-trimethylhexyl)amine (14%), 2,2,4-Trimethylpentane (1%)
Benzoic acid	Cyclohexylmethylamine (78%), Dicyclohexylmethylamine (7%), Cyclohexane (5%), Cyclohexanecarboxamide (4%), *N*-(cyclohexylmethyl)cyclopentanamine (1%), *N*-(cyclohexylmethyl)cyclohexanecarboxamide (2%),
p-Toluic acid	(4-methylcyclohexyl)methanamine (80%), 1,4-Dimethylcyclohexane (4%), P-Xylene (1%), Bis((4-methylcyclohexyl)methyl)amine (11%), 4-Methyl-*N*-((4-methylcyclohexyl)methyl)cyclohexanecarboxamide (2%), 4-Methylcyclohexanecarboxamide (1%)
2-Methylbutanoic acid	2-Methylbutylamine (90%), Bis(2-methylbutyl)amine (1%), 2-Methylbutanamide (10%)
2-Methylpentanoic acid	2-Methylpentylamine (74%), 2-Methylpentanamide (24%)
2-Ethylbutanoic acid	2-Ethylbutylamine (43%), 2-Ethylbutanamide (53%), 2-Ethylbutanol (2%)
2-Ethylbutanoic acid [a]	2-Ethylbutylamine (85%), 2-Ethylbutanamide (9%), 2-Ethyl-*N*-*(*2-ethylbutyl)butanamide (1%), Bis(2-ethylbutyl)amine (3%), *N*-(2-ethylbutyl)cyclopentanamine (1%)
2-Propylpentanoic acid	2-Propylpentylamine (17%), 2-Propylpentanamide (82%), 2-Propylpentanol (1%)
2-Propylpentanoic acid [b]	2-Propylpentylamine (83%), 2-Propylpentanamide (6%), Bis(2-propylpentyl)amine (8%), *N*-(2-propylpentyl)cyclopentanamine (4%), 2-Propyl-*N*-(2-propylpentyl)pentanamide (1%)
Pivalic acid	Neopentylamine (74%), Pivalamide (26%)
(*S*)-2-Phenylpropanoic acid	3-Cyclohexyl-2-methylpropylamine (46%), Isopropylbenzene (1%), 3-Cyclohexyl-2-methylpropanamide (47%), Ethylbenzene (2%), Ethylcyclohexane (3%), Isopropylcyclohexane (1%)
Isophthalic acid	3-Azabicyclo[3.3.1]nonane (57%), (3-methylcyclohexyl)methanamine (11%), 3-Azabicyclo[3.3.1]nonan-2-one (21%), 1,3-Dimethylcyclohexane (1%), O-Xylene (1%), Cyclohexanemethylamine (3%)
Adipic acid	Azepane (53%), Caprolactam (39%), 6-(azepan-1-yl)hexan-1-amine (4%), Hexylamine (2%), Pentylamine (2%)
Sebacic acid	Decamethylenediamine (30%), Decylamine (11%), Nonylamine (4%), N^1-(10-aminodecyl)decane-1,10-diamine (55%)
L-Valine	Isobutylamine (50%), Valine (6%), 2-Amino-3-methylbutane (7%), Diisobutylamine (5%), 3,6-Diisopropylpiperazine-2,5-dione (2%)
Salicylic acid	Cyclohexylamine (50%), 2-Methylcyclohexylamine (11%), O-Cresol (5%), Cyclohexanemethylamine (10%), Cyclohexanecarboxamide (11%)

Substrate	Products distribution (yield)
2-Octanol	2-Octylamine (98%), octane (1%).
Pentafluorobenzoic acid	Cyclohexane (55%), the remaining 45% is mainly a complex mixture of mono-, di- and trifluorinated aromatic compounds.
5-Chlorovaleric acid	Pïperidine (85%), 2-Piperidinone (9%), butylamine (2%), pentylamine (2%)
Furoic acid	Tetrahydrofuran (13%), Methyltetrahydrofuran (5%), Butylamine (10%), Piperidine (9%), Tetrahydrofurfurylamine (43%), Pentylamine (6%).
m-Anisic acid	Cyclohexane (2%), methylcyclohexane (3%), methoxycyclohexane (2%), 1-methoxy-3-methylcyclohexane (1%), Cyclohexanemethylamine (44%), (3-methoxycyclohexyl)methanamine (29%) cyclohexanecarboxamide (6%).
4-Methoxycyclohexane-carboxylic acid	Methoxycyclohexane (1%), 1-methoxy-4-methylcyclohexane (1%), 4-methoxy-N-((4-methoxycyclohexyl)methyl)cyclohexanecarboxamide (3%), (4-methoxycyclohexyl)methanamine (81%), 4-methoxycyclohexanecarboxamide (4%), bis((4-methoxycyclohexyl)methyl)amine (9%).
BOC-Valine-OH	Degradation of protecting group: 0.07M tert-butylalcohol in reaction mixture. 3-methyl-1,2-butanediamine (20%), 2-amino-3-methylbutanamide (37%), remaining 43% is a complex mixture of non-volatile compounds.

a longer reaction time (48h). b longer reaction time (120h).

6. Raw isolated product NMR spectra

Due to an intense ^{1}H-signal for the solvent (CPME) located between 1.4 and 1.8 ppm, a NMR spectrum of the crude reaction mixture did not yield a clean spectrum for the amine products. In order to obtain clean NMR spectra for at least a number of crude amine products, a few drops of H_2SO_4 were added to 5 randomly selected samples (2.5 mL each). Doing so, an ammonium.HSO_4 salt was formed and precipitated out of the apolar CPME solution. This precipitate was washed with diethyl ether to remove leftover CPME and dried afterwards at 60°C overnight. The obtained white powders were redissolved in D_2O after which NMR spectra were recorded (the sample of tetradecylammonium.HSO_4 did not dissolve in D_2O and was recorded in MeOH-d4 instead).

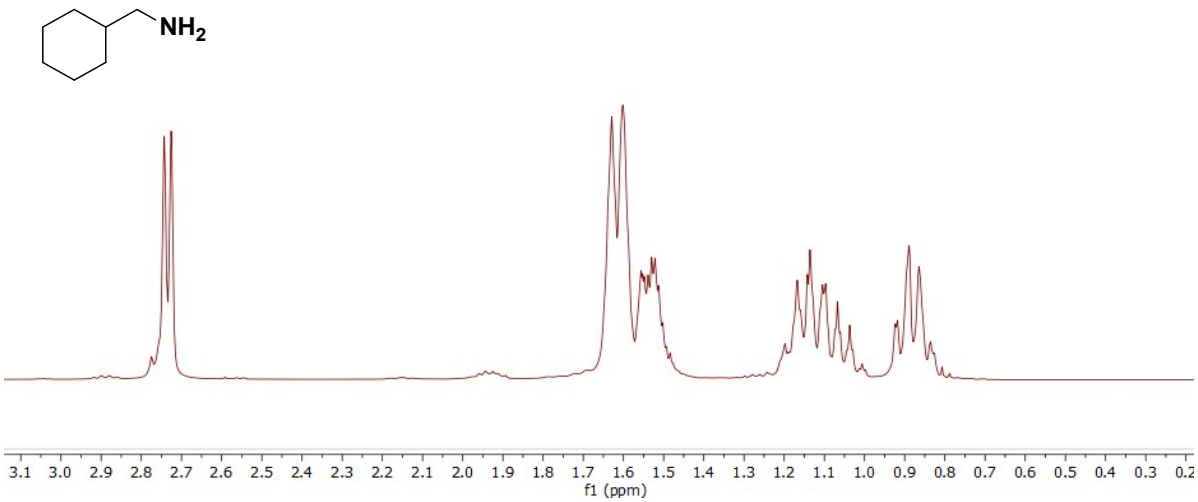


Figure S 8 – NMR spectrum of cyclohexylmethanamine (hydrogensulfate salt) in D_2O with impurities of bis(cyclohexylmethyl)amine and cyclohexanecarboxamide.

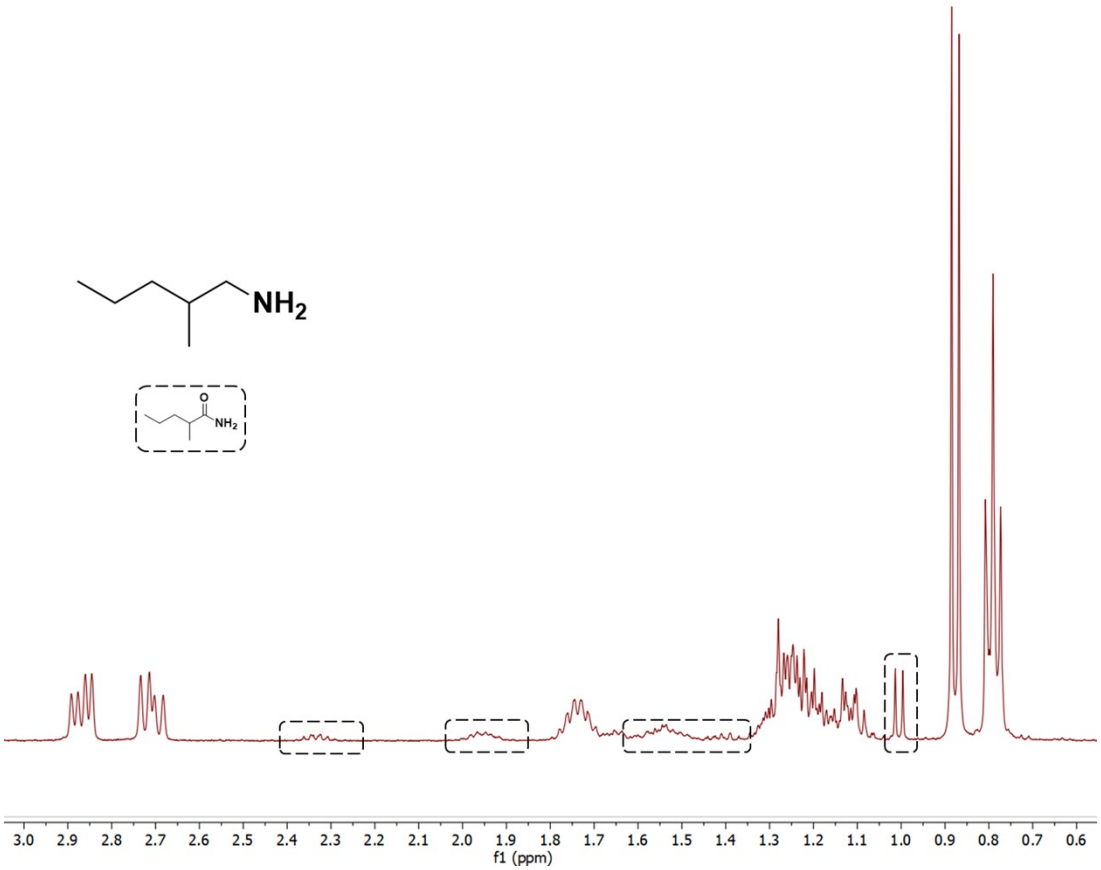


Figure S 9 – NMR spectrum of 2-methylpentylamine (hydrogensulfate salt) in D_2O with impurities of 2-methylpentanamide.

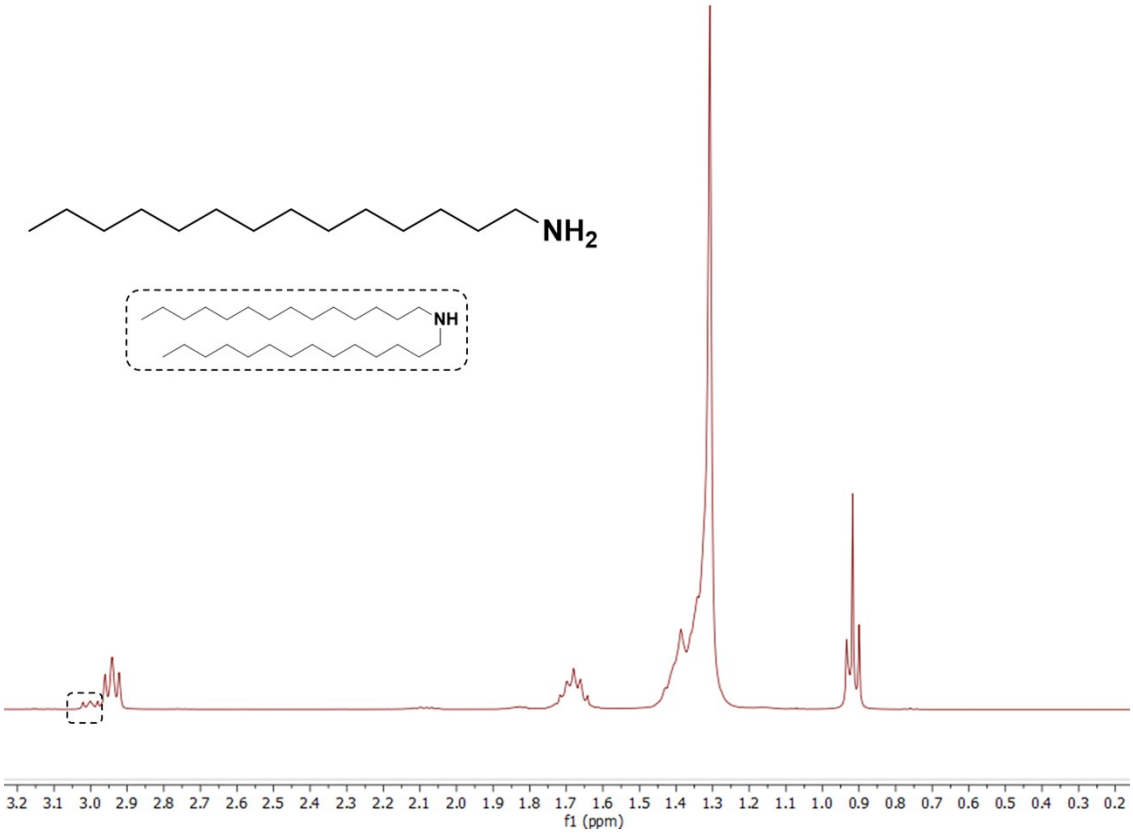


Figure S 10 – NMR spectrum of tetradecylamine (hydrogensulfate salt) in MeOH-d_4 with impurities of ditetradecylamine.

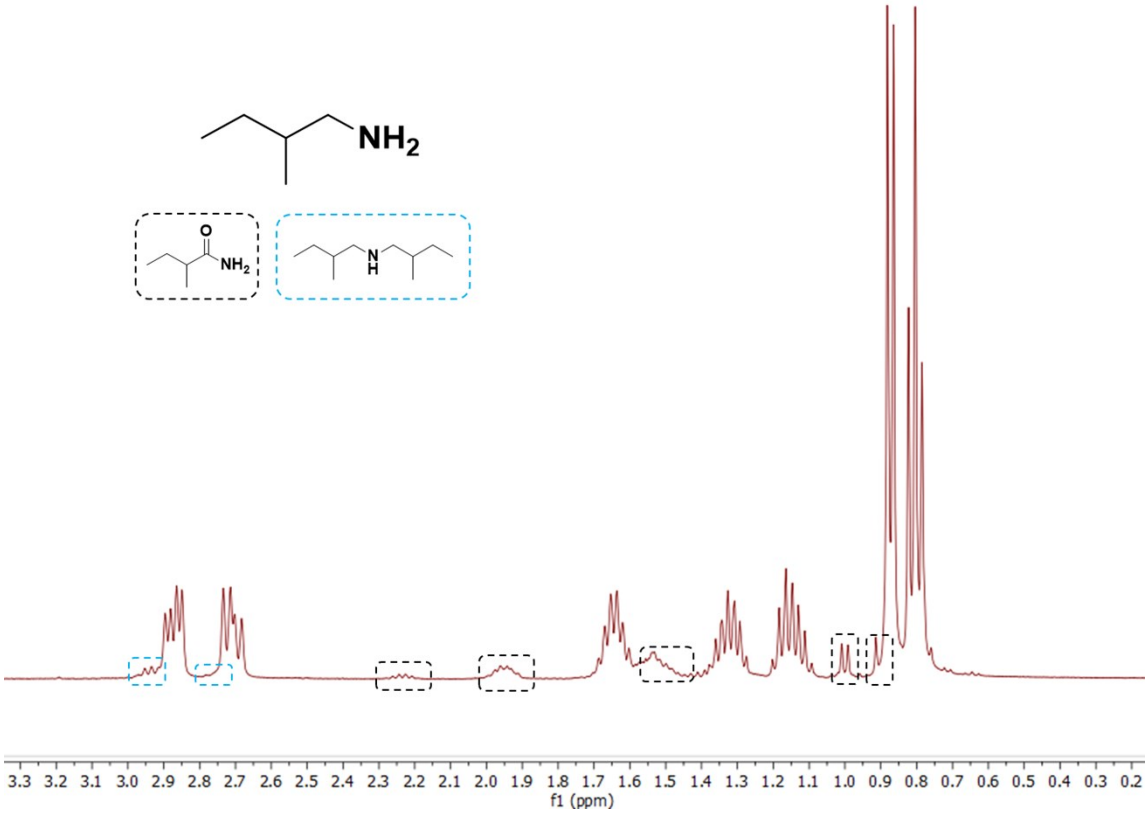


Figure S 11 – NMR spectrum of 2-methylbutylamine (hydrogensulfate salt) in D_2O with impurities of bis(2-methylbutyl)amine and 2-methylbutyramide.

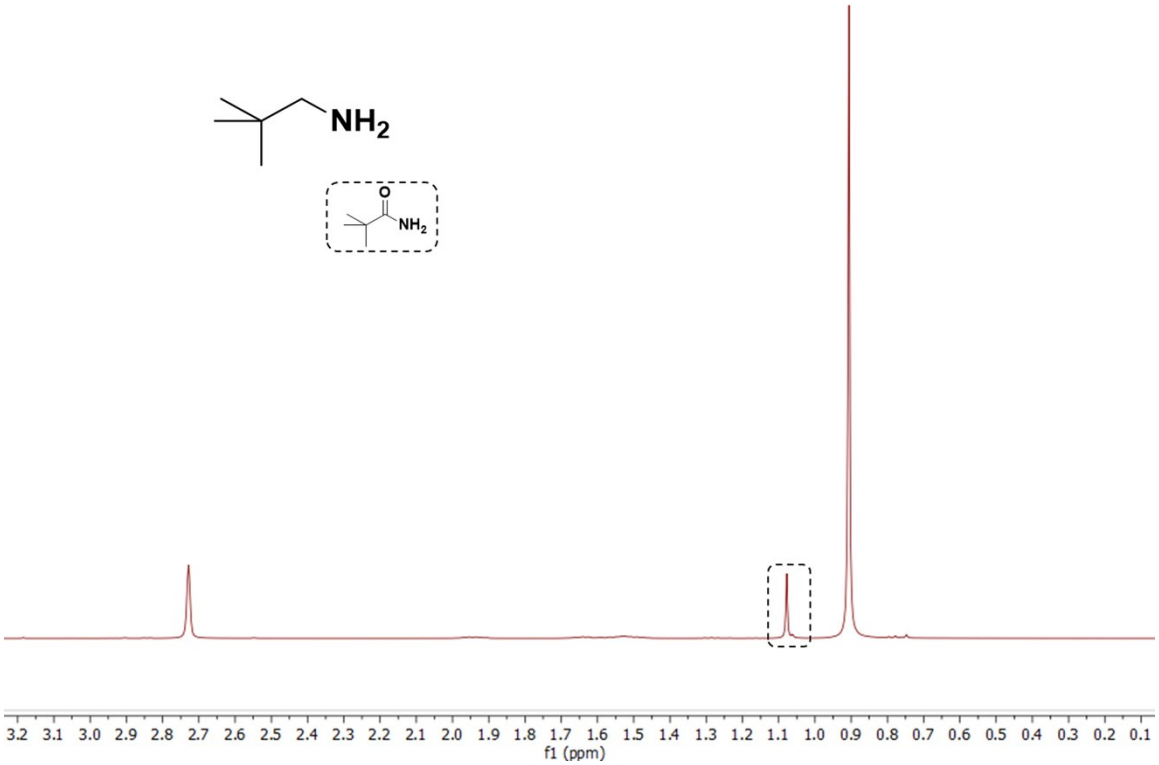
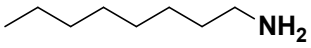


Figure S 12 – NMR spectrum of neopentylamine (hydrogensulfate salt) in D_2O with impurities of trimethylacetamide.

7. Product identification

General information: ^{1}H-NMR spectra were calibrated by setting the singlet signal of the external standard (benzyl alcohol) to 4.59 ppm.[2]

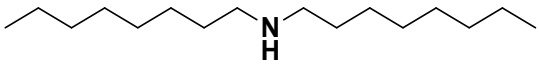
Octylamine (1, MW = 129 g/mol)



^{1}H-NMR (400 MHz, methanol-d4): δ (ppm) = 2.62 (t, 2H, NH_2-C**H**$_2$-), 1.46 (quint, 2H, NH_2-CH_2-C**H**$_2$-), 1.39-1.25 (m, 10H, -(C**H**$_2$)$_5$-CH_3), 0.91 (t, 3H, -C**H**$_3$).

GC-MS (EI, 70eV): m/z (rel. int, %): 129 (13), 128 (8), 114 (5), 100 (26), 87 (5), 86 (52), 84 (8), 83 (12), 73 (6), 72 (17), 70 (16), 69 (33), 68 (5), 67 (6), 59 (15), 57 (9), 56 (40), 55 (48), 54 (7), 53 (10), 45 (62), 44 (75), 43 (47), 42 (39), 41 (100), 40 (8), 39 (42).

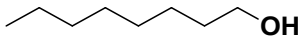
Dioctylamine (2, MW = 241 g/mol)



^{1}H-NMR (400 MHz, methanol-d4): δ (ppm) = 2.56 (t, 4H, -NH-C**H**$_2$-), 1.46 (quint, 4H, -NH-CH_2-C**H**$_2$-), 1.39-1.25 (m, 20H, -(C**H**$_2$)$_5$-CH_3), 0.91 (t, 6H, -C**H**$_3$).

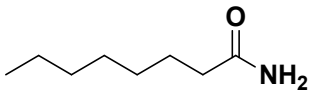
GC-MS (EI, 70eV): m/z (rel. int, %): 241 (5), 143 (11), 142 (100), 57 (6), 44 (32), 43 (10), 41 (8).

Octanol (3, MW = 130 g/mol)



GC-MS (EI, 70eV): m/z (rel. int, %): 39 (21), 41 (86), 42 (49), 43 (63), 44 (5), 53 (6), 54 (6), 55 (91), 56 (100), 57 (38), 67 (7), 68 (20), 69 (68), 70 (67), 71 (9), 82 (10), 83 (44), 84 (51).

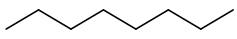
Octanamide (4, MW = 143 g/mol)



^{1}H-NMR (400 MHz, methanol-d4): δ (ppm) = 2.18 (t, 2H, -C(=O)-C**H**$_2$-), 1.78-1.47 (m, 4H, -C(=O)-CH_2-C**H**$_2$-C**H**$_2$-), 1.38-1.23 (m, 4H, -C**H**$_2$-C**H**$_2$-CH_3), 0.90 (t, 3H, -C**H**$_3$).

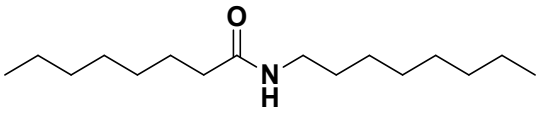
GC-MS (EI, 70eV): m/z (rel. int, %): 86 (9), 73 (5), 72 (29), 59 (100), 57 (8), 55 (9), 44 (20), 43 (14), 42 (5), 41 (14), 39 (5).

Octanol (5, MW = 114 g/mol)



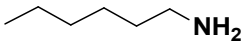
GC-MS (EI, 70eV): m/z (rel. int, %): 39 (13), 41 (46), 42 (15), 43 (100), 55 (13), 56 (22), 57 (42), 70 (17), 71 (31), 84 (11), 85 (52), 114 (7).

***N*-Octyloctanamide (6, MW = 255 g/mol)**



GC-MS (EI, 70eV): m/z (rel. int, %): 255 (16), 226 (20), 212 (20), 198 (25), 185 (13), 184 (100), 172 (7), 171 (55), 170 (6), 157 (16), 156 (49), 144 (13), 142 (17), 130 (7), 129 (8), 128 (29), 127 (39), 115 (10), 114 (44), 101 (19), 100 (38), 98 (5), 87 (30), 86 (47), 84 (8), 83 (5) 73 (63), 72 (21), 71 (17), 70 (5), 69 (12), 67 (5), 60 (9), 59 (5), 58 (15), 57 (87), 56 (11), 55 (37), 44 (41), 43 (60), 42 (12), 41 (51), 39 (8).

Hexylamine (7, MW = 101 g/mol)

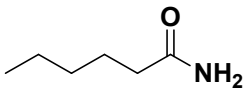


^{1}H-NMR (400 MHz, methanol-d4): δ (ppm) = 2.63 (t, 2H, NH_2-C**H**$_2$-), 1.47 (quint, 2H, NH_2-CH_2-C**H**$_2$-), 1.40-1.26 (m, 6H, -(C**H**$_2$)$_3$-CH_3), 0.92 (t, 3H, -C**H**$_3$).

^{13}C-NMR (400 MHz, H2O/D2O): δ (ppm) = 41.3 (NH_2-**C**H_2-), 32.5 (NH_2-CH_2-**C**H_2-), 31.5 (-$(CH_2)_2$-**C**H_2-), 26.3 (-**C**H_2-CH_2-CH_3), 22.4 (-**C**H_2-CH_3), 13.6 (-**C**H_3).

GC-MS (EI, 70eV): m/z (rel. int, %): 55 (3), 45 (5), 44 (9), 43 (4), 42 (5), 41 (8), 39 (6), 30 (100), 28 (8), 27 (7).

Hexanamide (8, MW = 115 g/mol)

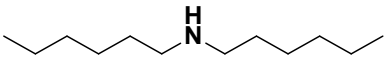


^{1}H-NMR (400 MHz, methanol-d4): δ (ppm) = 2.19 (t, 2H, -C(=O)-C**H**$_2$-), 1.61 (quint, 2H, -C(=O)-CH_2-C**H**$_2$-), 1.41-1.26 (m, 4H, -C**H**$_2$-C**H**$_2$-CH_3), 0.91 (t, 3H, -C**H**$_3$).

^{13}C-NMR (400 MHz, H2O/D2O): δ (ppm) = 178.0 (-**C**(=O)-), 35.3 (-C(=O)-**C**H_2-), 31.2 (-**C**H_2-CH_3), 25.3 (-C(=O)-CH_2-**C**H_2-), 22.2 (-**C**H_2-CH_2-CH_3), 13.4 (-**C**H_3).

GC-MS (EI, 70 eV): m/z (rel. int., %): 39 (19), 41 (24), 42 (14), 43 (29), 44 (52), 55 (14), 59 (100), 72 (33), 73 (8), 86 (23).

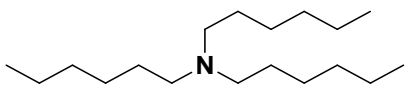
Dihexylamine (9, MW = 185 g/mol)



^{1}H-NMR (400 MHz, methanol-d4): δ (ppm) = 2.57 (t, 4H, -C**H**$_2$-NH-C**H**$_2$-), 1.47 (quint, 4H, -NH-CH_2-C**H**$_2$-), 1.40-1.26 (m, 12H, -(C**H**$_2$)$_3$-CH_3), 0.92 (t, 6H, -C**H**$_3$).

GC-MS (EI, 70eV): m/z (rel. int, %): 185 (6), 115 (9), 114 (100), 56 (5), 55 (6), 44 (53), 43 (21), 41 (11), 30 (9), 29 (6).

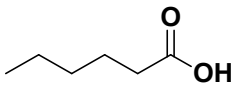
Trihexylamine (10, MW = 269 g/mol)



^{1}H-NMR (400 MHz, methanol-d4): δ (ppm) = 2.43 (t, 6H, -C**H$_2$**-NH-C**H$_2$**-), 1.47 (quint, 6H, -NH-CH$_2$-C**H$_2$**-), 1.40-1.26 (m, 18H, -(C**H$_2$**)$_3$-CH$_3$), 0.92 (t, 9H, -C**H$_3$**).

GC-MS (EI, 70eV): m/z (rel. int, %): 200 (15), 199 (100), 128 (13), 98 (5), 58 (5), 44 (5), 43 (12), 41 (5).

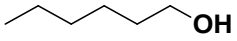
Hexanoic acid (11, MW = 116 g/mol)



^{1}H-NMR (400 MHz, methanol-d4): δ (ppm) = 2.16 (t, 2H, -C(=O)-C**H$_2$**-), 1.61 (quint, 2H, -C(=O)-CH$_2$-C**H$_2$**-), 1.41-1.26 (m, 4H, -C**H$_2$**-C**H$_2$**-CH$_3$), 0.91 (t, 3H, -C**H$_3$**).

GC-MS (EI, 70eV): m/z (rel. int, %): 87 (16), 74 (8), 73 (53), 70 (6), 61 (10), 60 (100), 57 (11), 56 (10), 55 (15), 45 (16), 43 (20), 42 (14), 41 (29), 39 (14).

Hexanol (12, MW = 102 g/mol)

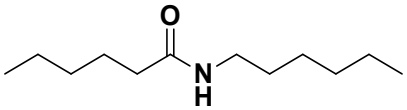


GC-MS (EI, 70eV): m/z (rel. int, %): 84 (5), 69 (31), 57 (9), 56 (100), 55 (52), 44 (5), 43 (54), 42 (39), 41 (42), 39 (13).

Hexane (13, MW = 72 g/mol)

GC-MS (EI, 70eV): m/z (rel. int, %): 39 (26), 41 (77), 42 (27), 43 (51), 55 (8), 56 (52), 57 (100).

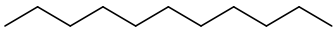
***N*-Hexylhexanamide (14, MW = 199 g/mol)**



^{1}H-NMR (400 MHz, methanol-d4): δ (ppm) = 7.29 (s, 1H, -N**H**-), 3.15 (t, 2H, -NH-C**H$_2$**-), 2.16 (t, 2H, -C(=O)-C**H$_2$**-), 1.60 (quint, 2H, -C(=O)-CH$_2$-C**H$_2$**-), 1.49 (quint, 2H, -NH-CH$_2$-C**H$_2$**-), 1.38-1.25 (m, 10H, -CH$_3$-(C**H$_2$**)$_2$-R-C(=O)-NH-R'-(C**H$_2$**)$_3$-CH$_3$), 0.91 (t, 6H, -C**H$_3$**).

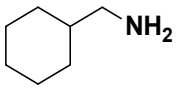
GC-MS (EI, 70eV): m/z (rel. int, %): 199 (8), 170 (31), 157 (10), 156 (86), 144 (7), 143 (71), 142 (6), 129 (18), 128 (52), 116 (16), 115 (5), 114 (35), 101 (29), 100 (43), 99 (62), 87 (37), 86 (54), 85 (12), 73 (53), 72 (24), 71 (35), 69 (5), 60 (9), 59 (5), 58 (15), 57 (10), 56 (10), 55 (27), 44 (40), 43 (100), 42 (13), 41 (42), 39 (11).

Undecane (15, MW = 156 g/mol)



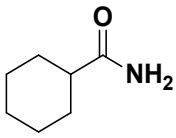
GC-MS (EI, 70eV): m/z (rel. int, %): 156 (6), 99 (5), 98 (7), 85 (32), 84 (9), 71 (51), 70 (14), 69 (6), 58 (5), 57 (100), 56 (18), 55 (16), 43 (81), 42 (12), 41 (40), 39 (9).

Cyclohexylmethanamine (16, MW = 113 g/mol)



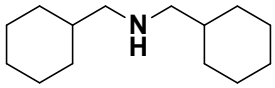
GC-MS (EI, 70eV): m/z (rel. int, %): 114 (12), 113 (100), 96 (43), 95 (11), 83 (5), 82 (16), 81 (38), 79 (9), 77 (8), 70 (6), 68 (18), 67 (73), 66 (5), 65 (7), 56 (23), 55 (70), 54 (43), 53 (21), 52 (5), 51 (8), 43 (10), 42 (19), 41 (77), 39 (53).

Cyclohexanecarboxamide (17, MW = 127 g/mol)



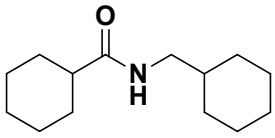
GC-MS (EI, 70eV): m/z (rel. int, %): 127 (39), 126 (13), 112 (15), 99 (9), 98 (40), 86 (18), 85 (10), 84 (5), 83 (38), 82 (6), 81 (7), 79 (5), 73 (10), 72 (96), 69 (5), 67 (14), 59 (64), 56 (16), 55 (100), 54 (11), 53 (11), 44 (31), 43 (7), 42 (7), 41 (50), 39 (25).

Bis(cyclohexylmethyl)amine (18, MW = 209 g/mol)



GC-MS (EI, 70eV): m/z (rel. int, %): 209 (5), 127 (9), 126 (100), 97 (6), 55 (23), 44 (33), 43 (7), 41 (11).

***N*-(cyclohexylmethyl)cyclohexanecarboxamide (19, MW = 223 g/mol)**

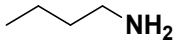


GC-MS (EI, 70eV): m/z (rel. int, %): 223 (10), 168 (17), 141 (20), 140 (8), 129 (8), 128 (100), 112 (10), 111 (17), 97 (6), 86 (9), 83 (43), 81 (7) 73 (8), 67 (9), 55 (42), 44 (11), 41 (19), 39 (5).

Cyclohexane (20, MW = 84 g/mol)

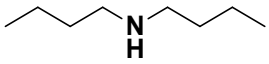
GC-MS (EI, 70eV): m/z (rel. int, %): 39 (28), 40 (6), 41 (53), 42 (20), 43 (11), 51 (5), 53 (6), 54 (7), 55 (35), 56 (100), 57 (5), 67 (5), 69 (34), 83 (5), 84 (92), 85 (6).

Butylamine (21, MW = 73 g/mol)



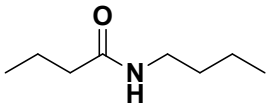
GC-MS (EI, 70eV): m/z (rel. int, %): 38 (6), 39 (31), 40 (13), 41 (64), 42 (100), 43 (25), 44 (6), 71 (55), 72 (57).

Dibutylamine (22, MW = 129 g/mol)



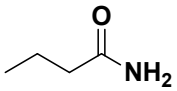
GC-MS (EI, 70eV): m/z (rel. int, %): 39 (10), 41 (22), 42 (8), 43 (10), 44 (90), 56 (7), 57 (17), 59 (8), 72 (5), 86 (100), 87 (6), 129 (12).

***N*-butylbutyramide (23, MW = 143 g/mol)**



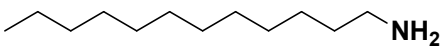
GC-MS (EI, 70eV): m/z (rel. int, %): 39 (26), 41 (65), 42 (17), 43 (100), 44 (70), 55 (13), 56 (9), 57 (41), 58 (19), 59 (10), 60 (7), 70 (6), 71 (98), 72 (19), 73 (63), 86 (22), 87 (7), 88 (28), 100 (67), 101 (29), 114 (12), 115 (52), 128 (35), 143 (34).

Butyramide (24, MW = 87 g/mol)



GC-MS (EI, 70eV): m/z (rel. int, %): 39 (16), 41 (26), 42 (13), 43 (36), 44 (69), 55 (10), 59 (100), 71 (9), 72 (24).

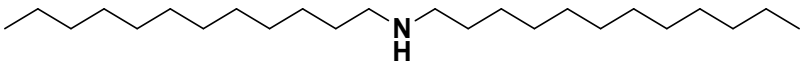
Dodecylamine (25, MW = 185 g/mol)



^{1}H-NMR (400 MHz, methanol-d4): δ (ppm) = 2.62 (t, 2H, NH_2-C**H**$_2$-), 1.47 (quint, 2H, NH_2-CH_2-C**H**$_2$-), 1.40-1.25 (m, 18H, -(C**H**$_2$)$_9$-CH_3), 0.92 (t, 3H, -C**H**$_3$).

GC-MS (EI, 70eV): m/z (rel. int, %): 185 (12), 184 (9), 170 (5), 156 (14), 142 (15), 128 (12), 114 (15) 111 (6), 100 (34), 98 (6), 97 (13), 87 (7), 86 (59), 84 (10), 83 (18), 82 (6), 73 (9), 72 (21), 71 (5), 70 (16), 69 (36), 68 (6), 67 (8), 59 (20), 57 (23), 56 (41), 55 (67), 54 (7), 53 (8), 45 (59), 44 (78), 43 (71), 42 (27), 41 (100), 39 (21)

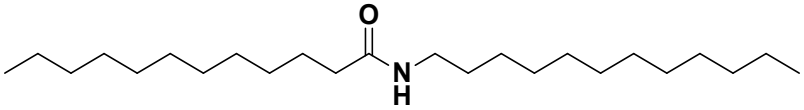
Didodecylamine (26, MW = 354 g/mol)



^{1}H-NMR (400 MHz, methanol-d4): δ (ppm) = 2.56 (t, 4H, -NH-C**H**$_2$-), 1.47 (quint, 4H, -NH-CH_2-C**H**$_2$-), 1.40-1.25 (m, 36H, -(C**H**$_2$)$_9$-CH_3), 0.92 (t, 6H, -C**H**$_3$).

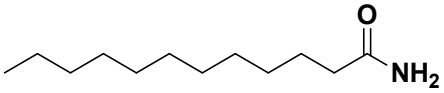
GC-MS (EI, 70eV): m/z (rel. int, %): 199 (15), 198 (100), 196 (5), 57 (8), 56 (5), 55 (7), 44 (19), 43 (9), 41 (7), 30 (5).

_N_-Dodecyldodecanamide (27, MW = 368 g/mol)



GC-MS (EI, 70eV): m/z (rel. int, %): 368 (5), 367 (18), 338 (10), 324 (15), 310 (9), 296 (20), 282 (19), 268 (12), 254 (22), 241 (17), 240 (100), 228 (12), 227 (61), 213 (14), 212 (55), 207 (5), 200 (9), 198 (11), 186 (14), 184 (20), 183 (15), 170 (13), 156 (12), 142 (16), 129 (5), 128 (18), 115 (9), 114 (36), 101 (16), 100 (27), 98 (8), 97 (7), 87 (23), 86 (34), 85 (13), 84 (8), 83 (11), 81 (5), 73 (47), 72 (16), 71 (21), 70 (6), 69 (19), 60 (8), 58 (9), 57 (55), 55 (39), 44 (27), 43 (71), 42 (8), 41 (37).

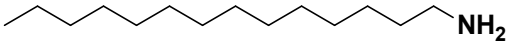
Dodecanamide (28, MW = 199 g/mol)



^{1}H-NMR (400 MHz, methanol-d4): δ (ppm) = 2.19 (t, 2H, -C(=O)-C**H$_2$**-), 1.60 (quint, 2H, -C(=O)-CH$_2$-C**H$_2$**-), 1.38-1.22 (m, 16H, -(C**H$_2$**)$_8$-CH$_3$), 0.90 (t, 3H, -C**H$_3$**).

GC-MS (EI, 70eV): m/z (rel. int, %): 128 (5), 114 (5), 86 (8), 73 (6), 72 (40), 60 (6), 59 (100), 57 (7), 55 (11), 44 (15), 43 (17), 41 (15).

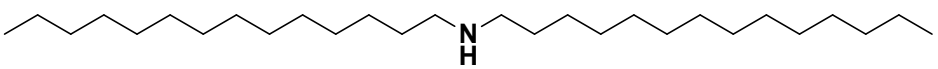
Tetradecylamine (29, MW = 213 g/mol)



^{1}H-NMR (400 MHz, methanol-d4): δ (ppm) = 2.63 (t, 2H, NH$_2$-C**H$_2$**-), 1.47 (quint, 2H, NH$_2$-CH$_2$-C**H$_2$**-), 1.40-1.24 (m, 22H, -(C**H$_2$**)$_{11}$-CH$_3$), 0.91 (t, 3H, -C**H$_3$**).

GC-MS (EI, 70eV): m/z (rel. int, %): 39 (19), 40 (5), 41 (100), 42 (24), 43 (81), 44 (85), 45 (48), 53 (8), 54 (8), 55 (71), 56 (40), 57 (31), 58 (5), 59 (19), 67 (11), 68 (7), 69 (40), 70 (15), 71 (8), 72 (21), 73 (9), 82 (7), 83 (23), 84 (9), 86 (58), 87 (8), 97 (17), 98 (6), 100 (36), 111 (8), 114 (18), 128 (15), 142 (19), 156 (18), 170 (13), 184 (13), 198 (8), 212 (15), 213 (18), 214 (9).

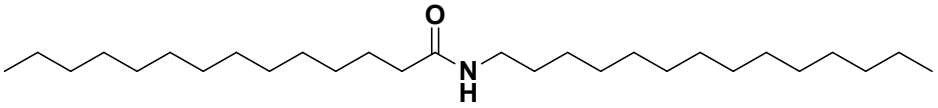
Ditetradecylamine (30, MW = 409 g/mol)



^{1}H-NMR (400 MHz, methanol-d4): δ (ppm) = 2.56 (t, 4H, -NH-C**H$_2$**-), 1.47 (quint, 4H, -NH-CH$_2$-C**H$_2$**-), 1.40-1.24 (m, 44H, -(C**H$_2$**)$_{11}$-CH$_3$), 0.91 (t, 6H, -C**H$_3$**).

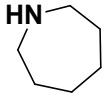
GC-MS (EI, 70eV): m/z (rel. int, %): 41 (8), 43 (12), 44 (21), 55 (5), 57 (6), 73 (18), 96 (8), 133 (7), 147 (7), 177 (6), 191 (12), 193 (5), 207 (100), 208 (21), 209 (12), 224 (19), 226 (95), 227 (16), 267 (6), 281 (52), 282 (14), 283 (9), 341 (9), 355 (9).

***N*-tetradecyltetradecanamide (31, MW = 423 g/mol)**



GC-MS (EI, 70eV): m/z (rel. int, %): 41 (27), 42 (6), 43 (47), 44 (19), 55 (27), 56 (10), 57 (43), 58 (8), 60 (5), 67 (5), 69 (18), 70 (6), 71 (18), 72 (11), 73 (44), 83 (9), 84 (7), 85 (12), 86 (23), 87 (13), 95 (5), 96 (8), 97 (8), 98 (8), 100 (18), 101 (10), 114 (28), 115 (9), 128 (14),133 (8), 142 (13), 147 (6), 156 (10), 170 (9), 177 (5), 184 (9), 191 (11), 193 (7), 198 (13), 207 (98), 208 (19), 209 (14), 211 (12), 212 (21), 213 (6), 214 (17), 226 (8), 228 (7), 240 (57), 241 (14), 255 (75), 256 (17), 267 (7), 268 (100), 269 (23), 281 (49), 282 (37), 283 (13), 296 (13), 297 (5), 310 (18), 311 (8), 324 (26), 325 (6), 338 (13), 341 (10), 352 (7), 355 (8), 366 (8), 380 (21), 381 (6), 394 (13), 422 (7), 423 (25), 424 (8).

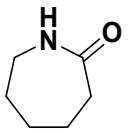
Azepane (32, MW = 99 g/mol)



^{1}H-NMR (400 MHz, methanol-d4): δ (ppm) = 2.87-2.71 (m, 4H, -C**H$_2$**-NH-C**H$_2$**-), 1.74-1.49 (m, 8H, -NH-CH_2-C**H$_2$**-C**H$_2$**-).

GC-MS (EI, 70eV): m/z (rel. int, %): 99 (64), 98 (28), 84 (15), 71 (9), 70 (100), 68 (6), 57 (39), 56 (51), 55 (8), 44 (25), 43 (66), 42 (24), 41 (25), 39 (17).

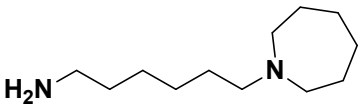
Caprolactam (33, MW = 113 g/mol)



^{1}H-NMR (400 MHz, methanol-d4): δ (ppm) = 3.22-3.15 (m, 2H, -NH-C**H$_2$**-), 2.48-2.39 (m, 2H, -C(=O)-C**H$_2$**-), 1.82-1.48 (m, 6H, -NH-CH_2-(C**H$_2$**)$_3$-CH_2-C(=O)-).

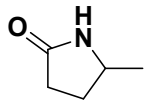
GC-MS (EI, 70eV): m/z (rel. int, %): 114 (7), 113 (100), 86 (5), 85 (60), 84 (54), 83 (10), 69 (5), 68 (8), 67 (13), 59 (13), 57 (11), 56 (84), 55 (84), 55 (25), 54 (6), 53 (5), 44 (17), 43 (21), 42 (56), 41 (54), 40 (11), 39 (31).

6-(azepan-1-yl)hexan-1-amine (34, MW = 198 g/mol)



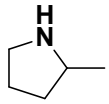
GC-MS (EI, 70eV): m/z (rel. int, %): 41 (6), 42 (5), 55 (6), 58 (8), 112 (100), 113 (8).

5-Methyl-2-pyrrolidone (35, MW = 99 g/mol)



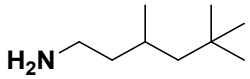
GC-MS (EI, 70eV): m/z (rel. int, %): 39 (7), 40 (5), 41 (44), 42 (14), 43 (5), 44 (25), 55 (11), 56 (19), 84 (100), 85 (5), 99 (26).

2-Methylpyrrolidine (36, MW = 85 g/mol)



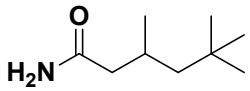
GC-MS (EI, 70eV): m/z (rel. int, %): 39 (9), 41 (15), 42 (14), 43 (11), 56 (23), 57 (44), 68 (8), 70 (100), 71 (5), 84 (10), 85 (9).

3,5,5-Trimethylhexylamine (37, MW = 143 g/mol)



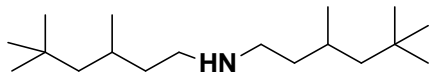
GC-MS (EI, 70eV): m/z (rel. int, %): 39 (36), 40 (10), 41 (100), 42 (20), 43 (41), 44 (38), 45 (50), 53 (11), 54 (6), 55 (50), 56 (36), 57 (77), 58 (7), 67 (9), 68 (5), 69 (46), 70 (57), 71 (21), 72 (5), 83 (22), 84 (8), 86 (82), 87 (7), 128 (36).

3,5,5-Trimethylhexylamide (38, MW = 157 g/mol)



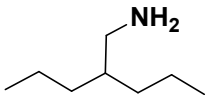
GC-MS (EI, 70eV): m/z (rel. int, %): 39 (8), 41 (21), 43 (10), 44 (14), 55 (11), 56 (5), 57 (25), 59 (100), 60 (5), 83 (23), 86 (7), 100 (18), 101 (5), 142 (9).

Bis(3,5,5-trimethylhexyl)amine (39, MW = 269 g/mol)



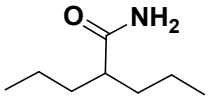
GC-MS (EI, 70eV): m/z (rel. int, %): 39 (6), 41 (23), 42 (6), 43 (18), 44 (100), 55 (11), 56 (18), 57 (37), 60 (17), 69 (12), 70 (7), 83 (5), 84 (7), 86 (6), 98 (7), 127 (21),154 (7), 156 (27), 210 (6), 212 (27), 254 (30).

2-Propylpentylamine (40, MW = 129 g/mol)



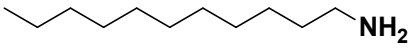
GC-MS (EI, 70eV): m/z (rel. int, %): 39 (38), 40 (6), 41 (100), 42 (34), 43 (32), 44 (25), 53 (11), 54 (10), 55 (50), 56 (54), 57 (25), 58 (9), 67 (9), 68 (6), 69 (29), 70 (33), 72 (7), 83 (9), 84 (7), 86 (22), 87 (14), 98 (5), 100 (5), 112 (40), 129 (29).

2-Propylpentanamide (41, MW = 143 g/mol)



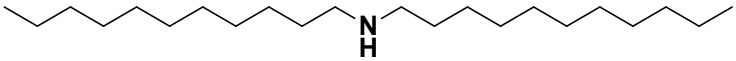
GC-MS (EI, 70eV): m/z (rel. int, %): 39 (6), 41 (17), 43 (12), 44 (13), 55 (13), 57 (17), 72 (100), 73 (5), 100 (14), 101 (40), 114 (12).

Undecylamine (42, MW = 171 g/mol)



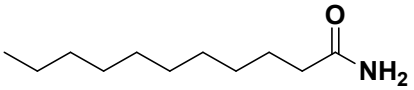
GC-MS (EI, 70eV): m/z (rel. int, %): 39 (26), 40 (6), 41 (100), 42 (29), 43 (62), 44 (71), 45 (51), 53 (8), 54 (7), 55 (59), 56 (39), 57 (17), 59 (17), 67 (7), 68 (5), 69 (32), 70 (15), 72 (17), 73 (7), 82 (5), 83 (15), 84 (8), 86 (50), 87 (6), 97 (10), 100 (27), 111 (5), 114 (12), 128 (9), 142 (13), 156 (5), 170 (7), 171 (9).

Diundecylamine (43, MW = 326 g/mol)



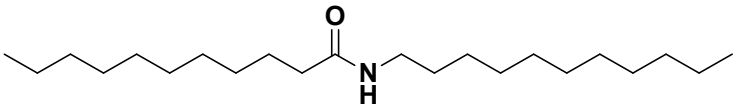
GC-MS (EI, 70eV): m/z (rel. int, %): 41 (7), 43 (10), 44 (26), 55 (6), 57 (6), 182 (7), 184 (100), 185 (14).

Undecanamide (44, MW = 185 g/mol)



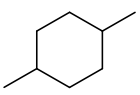
GC-MS (EI, 70eV): m/z (rel. int, %): 41 (16), 43 (16), 44 (15), 55 (11), 57 (6), 59 (100), 60 (6), 72 (38), 73 (6), 86 (9), 114 (5).

***N*-undecylundecanamide (45, MW = 340 g/mol)**



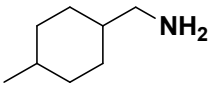
GC-MS (EI, 70eV): m/z (rel. int, %): 41 (35), 42 (8), 43 (62), 44 (22), 55 (33), 56 (10), 57 (43), 58 (8), 60 (7), 67 (5), 69 (16), 70 (5), 71 (16), 72 (15), 73 (43), 83 (8), 84 (8), 85 (14), 86 (32), 87 (21), 95 (6), 97 (5), 98 (7), 100 (26), 101 (15), 114 (35), 115 (8), 128 (18), 129 (5), 142 (15), 156 (16), 169 (17), 170 (20), 171 (5), 172 (12), 184 (10), 186 (10), 198 (53), 199 (13), 212 (6), 213 (61), 214 (9), 226 (100), 227 (16), 240 (24), 241 (5), 254 (13), 268 (19), 282 (21), 283 (5), 296 (19), 297 (5), 310 (11), 339 (19), 340 (5).

1,4-Dimethylcyclohexane (46, MW = 112 g/mol)



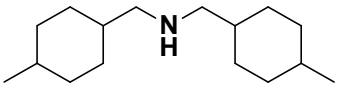
GC-MS (EI, 70eV): m/z (rel. int, %): 39 (15), 41 (28), 42 (10), 43 (5), 53 (6), 55 (73), 56 (18), 67 (5), 69 (16), 70 (9), 83 (9), 84 (6), 96 (10), 97 (100), 98 (8), 112 (35).

(4-methylcyclohexyl)methanamine (47, MW = 127 g/mol)



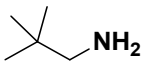
GC-MS (EI, 70eV): m/z (rel. int, %): 39 (54), 40 (9), 41 (69), 42 (20), 43 (15), 51 (8), 52 (5), 53 (26), 54 (37), 55 (100), 56 (28), 65 (9), 67 (51), 68 (29), 69 (12), 70 (11), 77 (10), 79 (14), 80 (6), 81 (78), 82 (23), 95 (40), 96 (9), 109 (9), 110 (50), 111 (5), 126 (5), 127 (73), 128 (8).

Bis((4-methylcyclohexyl)methyl)amine (48, MW = 237 g/mol)



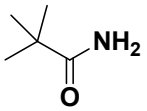
GC-MS (EI, 70eV): m/z (rel. int, %): 41 (9), 43 (6), 44 (28), 55 (16), 69 (11), 140 (100), 141 (10).

Neopenylamine (49, MW = 87 g/mol)



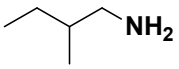
GC-MS (EI, 70eV): m/z (rel. int, %): 38 (5), 39 (46), 40 (7), 41 (88), 42 (14), 43 (8), 44 (7), 53 (7), 54 (7), 55 (100), 56 (38), 57 (54), 70 (8), 72 (81), 87 (43).

Trimethylacetamide (50, MW = 101 g/mol)



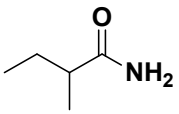
GC-MS (EI, 70eV): m/z (rel. int, %): 39 (23), 41 (66), 42 (7), 44 (24), 46 (17), 55 (5), 56 (7), 57 (100), 58 (19), 59 (5), 69 (5), 86 (13), 101 (18).

2-Methylbutylamine (51, MW = 87 g/mol)



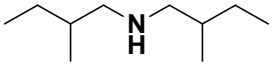
GC-MS (EI, 70eV): m/z (rel. int, %): 38 (7), 39 (64), 40 (9), 41 (100), 42 (31), 43 (19), 44 (35), 50 (6), 51 (8), 52 (5), 53 (9), 54 (12), 55 (29), 56 (45), 57 (16), 58 (33), 69 (8), 70 (18), 86 (5), 87 (69), 88 (5).

2-Methylbutyramide (52, MW = 101 g/mol)



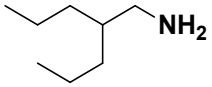
GC-MS (EI, 70eV): m/z (rel. int, %): 39 (13), 41 (37), 43 (6), 44 (44), 55 (10), 56 (10), 57 (33), 69 (9), 72 (17), 73 (100), 86 (29).

Bis(2-methylbutyl)amine (53, MW = 157 g/mol)



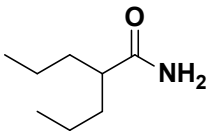
GC-MS (EI, 70eV): m/z (rel. int, %): 39 (6), 41 (16), 42 (7), 43 (30), 44 (46), 55 (5), 70 (5), 71 (14), 100 (100), 101 (7), 157 (5).

2-Propylpentylamine (54, MW = 129 g/mol)



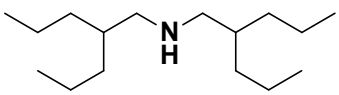
GC-MS (EI, 70eV): m/z (rel. int, %): 39 (39), 40 (8), 41 (100), 42 (34), 43 (32), 44 (25), 53 (11), 54 (10), 55 (49), 56 (53), 57 (24), 58 (8), 67 (9), 68 (6), 69 (28), 70 (32), 72 (6), 83 (9), 84 (6), 86 (21), 87 (12), 98 (5), 112 (36), 129 (27).

2-Propylpentanamide (55, MW = 143 g/mol)



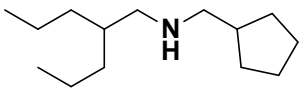
GC-MS (EI, 70eV): m/z (rel. int, %): 39 (6), 41 (17), 43 (12), 44 (13), 55 (13), 57 (17), 72 (100), 73 (5), 100 (13), 101 (40), 114 (12).

Bis(2-propylpentyl)amine (56, MW = 241 g/mol)



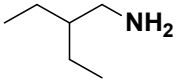
GC-MS (EI, 70eV): m/z (rel. int, %): 41 (16), 42 (5), 43 (20), 44 (58), 55 (7), 57 (15), 71 (9), 142 (100), 143 (10).

***N*-(cyclopentylmethyl)-2-propylpentan-1-amine (57, MW = 211 g/mol)**



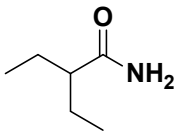
GC-MS (EI, 70eV): m/z (rel. int, %): 41 (14), 43 (5), 56 (7), 69 (6), 98 (100), 99 (7).

2-Ethylbutylamine (58, MW = 101 g/mol)



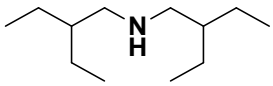
GC-MS (EI, 70eV): m/z (rel. int, %): 38 (7), 39 (77), 40 (12), 41 (100), 42 (47), 43 (66), 44 (29), 50 (6), 51 (10), 52 (6), 53 (21), 54 (18), 55 (99), 56 (82), 57 (6), 58 (22), 67 (6), 68 (5), 69 (17), 70 (24), 71 (5), 72 (36), 73 (5), 84 (42), 100 (5), 101 (74), 102 (9).

2-Ethylbutanamide (59, MW = 115 g/mol)



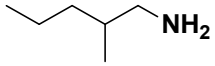
GC-MS (EI, 70eV): m/z (rel. int, %): 39 (19), 41 (30), 42 (8), 43 (64), 44 (41), 55 (26), 57 (5), 69 (19), 70 (5), 71 (16), 72 (99), 73 (6), 86 (50), 87 (100), 88 (5), 100 (9).

Bis(2-ethylbutyl)amine (60, MW = 185 g/mol)



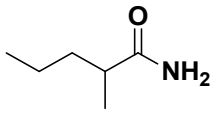
GC-MS (EI, 70eV): m/z (rel. int, %): 41 (14), 42 (5), 43 (34), 44 (57), 55 (7), 56 (5), 57 (5), 85 (7), 114 (100), 115 (8), 185 (4).

2-Methylpentylamine (61, MW = 101 g/mol)



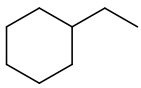
GC-MS (EI, 70eV): m/z (rel. int, %): 38 (6), 39 (70), 40 (11), 41 (100), 42 (45), 43 (51), 44 (22), 51 (6), 53 (12), 54 (11), 55 (51), 56 (45), 57 (9), 58 (34), 59 (35), 67 (5), 69 (13), 70 (11), 72 (6), 84 (22), 100 (5), 101 (58), 102 (9).

2-Methylpentanamide (62, MW = 115 g/mol)



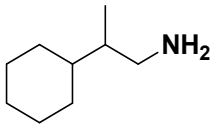
GC-MS (EI, 70eV): m/z (rel. int, %): 39 (10), 41 (18), 42 (6), 43 (35), 44 (29), 55 (12), 57 (7), 71 (7), 72 (21), 73 (100), 86 (21), 100 (6).

Ethylcyclohexane (63, MW = 112 g/mol)



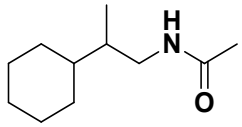
GC-MS (EI, 70eV): m/z (rel. int, %): 39 (17), 41 (36), 42 (9), 43 (6), 53 (6), 54 (7), 55 (77), 56 (10), 67 (15), 69 (8), 82 (48), 83 (100), 84 (7), 112 (23).

2-Cyclohexylpropanamine (64, MW = 141 g/mol)



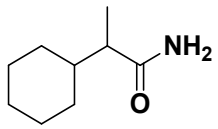
GC-MS (EI, 70eV): m/z (rel. int, %): 39 (33), 40 (7), 41 (73), 42 (15), 43 (11), 53 (17), 54 (17), 55 (54), 56 (16), 57 (9), 58 (13), 59 (32), 65 (5), 66 (5), 67 (41), 68 (17), 69 (34), 77 (6), 79 (10), 80 (6), 81 (38), 82 (42), 83 (6), 95 (11), 96 (6), 109 (7), 110 (9), 124 (100), 125 (10).

***N*-(2-cyclohexylpropyl)acetamide (65, MW = 183 g/mol)**



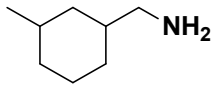
GC-MS (EI, 70eV): m/z (rel. int, %): 39 (10), 41 (31), 42 (7), 43 (36), 44 (6), 45 (6), 53 (6), 54 (5), 55 (28), 56 (6), 57 (5), 58 (15), 60 (39), 67 (17), 68 (7), 69 (30), 72 (31), 73 (100), 74 (9), 79 (5), 81 (22), 82 (19), 86 (9), 95 (6), 100 (25), 101 (8), 109 (6), 124 (13), 168 (15), 183 (4).

2-Cyclohexylpropanamide (66, MW = 155 g/mol)



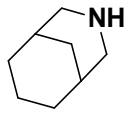
GC-MS (EI, 70eV): m/z (rel. int, %): 39 (6), 41 (12), 44 (10), 55 (11), 69 (6), 72 (10), 73 (100), 140 (5).

(3-methylcyclohexyl)methanamine (67, MW = 127 g/mol)



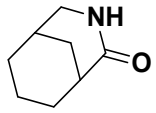
GC-MS (EI, 70eV): m/z (rel. int, %): 39 (53), 40 (10), 41 (72), 42 (17), 43 (15), 51 (8), 52 (5), 53 (24), 54 (31), 55 (100), 56 (29), 65 (9), 66 (5), 67 (50), 68 (27), 69 (13), 70 (5), 77 (10), 79 (14), 80 (6), 81 (62), 82 (41), 84 (7), 95 (37), 96 (9), 109 (10), 110 (37), 127 (67), 128 (6).

3-Azabicyclo[3.2.2]nonane (68, MW = 125 g/mol)



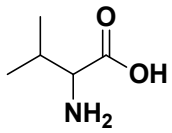
GC-MS (EI, 70eV): m/z (rel. int, %): 39 (20), 41 (21), 42 (10), 43 (14), 44 (100), 53 (9), 54 (14), 55 (15), 56 (9), 67 (18), 68 (14), 70 (6), 77 (5), 79 (10), 80 (7), 81 (7), 82 (61), 83 (6), 96 (7), 124 (30), 125 (53), 126 (5).

3-Azabicyclo[3.2.2]nonan-2-one (69, MW = 139 g/mol)



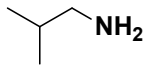
GC-MS (EI, 70eV): m/z (rel. int, %): 39 (28), 40 (6), 41 (25), 43 (16), 44 (5), 51 (6), 53 (15), 54 (28), 55 (26), 56 (12), 65 (5), 66 (7), 67 (57), 68 (90), 69 (10), 77 (10), 79 (23), 80 (11), 81 (26), 82 (33), 83 (7), 84 (15), 94 (12), 95 (5), 96 (13), 97 (6), 110 (15), 111 (7), 138 (10), 139 (100), 140 (9).

L-Valine (70, MW = 117 g/mol)



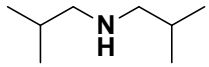
GC-MS (EI, 70eV): m/z (rel. int, %): 39 (13), 41 (12), 42 (6), 43 (8), 44 (5), 45 (13), 46 (13), 54 (6), 55 (39), 56 (30), 57 (37), 72 (100), 73 (6), 74 (34), 75 (13).

Isobutylamine (71, MW = 73 g/mol)



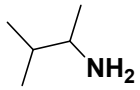
GC-MS (EI, 70eV): m/z (rel. int, %): 31 (11), 37 (8), 38 (100), 40 (14), 41 (74), 42 (26), 43 (24), 51 (7), 52 (9), 53 (5), 54 (20), 55 (28), 56 (53), 57 (20), 58 (18), 72 (13), 73 (87).

Diisobutylamine (72, MW = 129 g/mol)



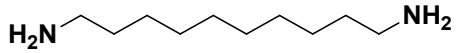
GC-MS (EI, 70eV): m/z (rel. int, %): 39 (8), 40 (6), 41 (29), 42 (16), 43 (15), 44 (17), 54 (5), 55 (7), 56 (12), 57 (27), 58 (9), 72 (7), 86 (100), 87 (12), 129 (23).

2-Amino-3-methylbutane (73, MW = 87 g/mol)



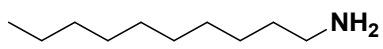
GC-MS (EI, 70eV): m/z (rel. int, %): 39 (11), 41 (10), 42 (11), 43 (13), 44 (100), 55 (17), 56 (12), 70 (7), 72 (11).

1,10-Diaminodecane (74, MW = 172 g/mol)



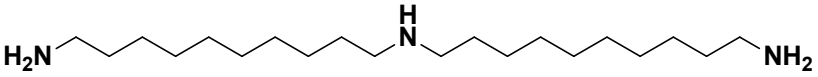
GC-MS (EI, 70eV): m/z (rel. int, %): 39 (12), 41 (40), 42 (17), 43 (23), 44 (75), 45 (38), 53 (5), 54 (6), 55 (44), 56 (60), 57 (8), 59 (27), 67 (10), 68 (6), 69 (32), 70 (20), 72 (26), 73 (11), 81 (7), 82 (6), 83 (12), 86 (45), 87 (11), 95 (5), 97 (9), 98 (6), 100 (45), 101 (5), 114 (31), 128 (36), 129 (5), 142 (21), 143 (72), 144 (8), 156 (100), 157 (12).

Decylamine (75, MW = 157 g/mol)



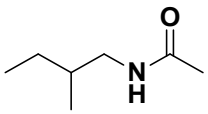
GC-MS (EI, 70eV): m/z (rel. int, %): 39 (31), 40 (7), 41 (100), 42 (30), 43 (54), 44 (67), 45 (50), 53 (9), 54 (7), 56 (37), 57 (13), 59 (15), 67 (7), 69 (27), 70 (15), 72 (16), 73 (6), 83 (13), 84 (7), 86 (46), 87 (5), 97 (8), 100 (25), 114 (10), 128 (9), 156 (7), 157 (10).

***N*^{1}-(10-aminodecyl)decane-1,10-diamine (76, MW = 327 g/mol)**



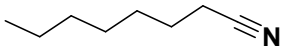
GC-MS (EI, 70eV): m/z (rel. int, %): 44 (11), 55 (7), 56 (6), 156 (6), 171 (6), 185 (100), 186 (13).

***N*-(2-methylbutyl)acetamide (77, MW = 129 g/mol)**



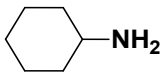
GC-MS (EI, 70eV): m/z (rel. int, %): 39 (16), 40 (5), 41 (32), 42 (18), 43 (95), 44 (9), 45 (10), 55 (15), 56 (12), 57 (9), 58 (36), 60 (61), 70 (11), 72 (100), 73 (64), 74 (10), 100 (51), 114 (10), 129 (9).

Octanenitrile (78, MW = 125 g/mol)



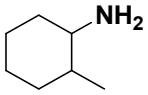
GC-MS (EI, 70eV): m/z (rel. int, %): 39 (22), 40 (5), 41 (62), 42 (10), 43 (26), 53 (5), 54 (37), 55 (34), 56 (7), 57 (9), 68 (8), 69 (35), 82 (100), 83 (40), 96 (52), 97 (22), 110 (13).

Cyclohexylamine (79, MW = 99 g/mol)



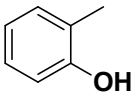
GC-MS (EI, 70eV): 39 (6), 41 (6), 42 (8), 43 (25), 56 (100), 57 (5), 70 (10), 99 (18).

2-Methylcyclohexylamine (80, MW = 113 g/mol)



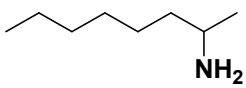
GC-MS (EI, 70eV): 39 (8), 41 (11), 42 (7), 43 (23), 55 (5), 56 (100), 57 (14), 67 (5), 70 (49), 71 (5), 84 (5), 113 (21).

O-Cresol (81, MW = 108 g/mol)



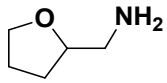
GC-MS (EI, 70eV): 39 (12), 50 (8), 51 (13), 52 (6), 53 (10), 63 (7), 77 (37), 78 (9), 79 (36), 80 (14), 89 (14), 90 (23), 91 (7), 107 (88), 108 (100), 109 (8).

2-Octylamine (82, MW = 129 g/mol)



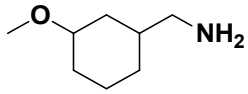
GC-MS (EI, 70eV): 39 (5), 41 (10), 42 (8), 43 (8), 44 (100), 55 (5), 56 (5), 114 (8).

Tetrahydrofurfurylamine (83, MW = 101 g/mol)



GC-MS (EI, 70eV): 39 (20), 40 (5), 41 (45), 42 (20), 43 (88), 44 (7), 56 (8), 58 (19), 70 (12), 71 (100), 72 (6), 84 (16), 101 (2).

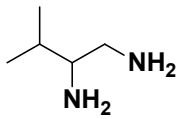
(3-methoxycyclohexyl)methanamine (84, MW = 143 g/mol)



GC-MS (trans) (EI, 70eV): 39 (33), 40 (5), 41 (57), 42 (12), 43 (35), 44 (8), 45 (26), 51 (5), 53 (19), 54 (35), 55 (27), 56 (43), 57 (8), 58 (20), 65 (6), 66 (5), 67 (100), 68 (35), 69 (15), 70 (8), 71 (41), 77 (13), 79 (27), 80 (14), 81 (42), 82 (48), 83 (9), 84 (10), 85 (6), 91 (7), 93 (9), 94 (21), 95 (10), 96 (7), 97 (9), 98 (5), 100 (17), 110 (6), 111 (24), 112 (44), 113 (69), 114 (6), 128 (14).

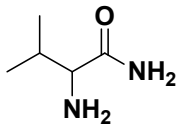
GC-MS (cis) (EI, 70eV): 39 (22), 41 (37), 42 (9), 43 (20), 45 (17), 53 (13), 54 (19), 55 (19), 56 (21), 57 (5), 58 (15), 67 (54), 68 (19), 69 (10), 70 (5), 71 (30), 72 (10), 77 (9), 79 (20), 80 (9), 81 (29), 82 (24), 83 (6), 84 (8), 85 (5), 91 (5), 93 (8), 94 (10), 95 (9), 97 (7), 98 (12), 110 (5), 111 (36), 112 (15), 113 (5), 126 (12), 128 (100), 129 (8), 143 (2).

3-Methyl-1,2-butanediamine (85, MW = 102 g/mol)



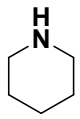
GC-MS (EI, 70eV): 39 (7), 41 (8), 42 (8), 43 (6), 44 (5), 55 (52), 56 (12), 57 (9), 59 (18), 72 (100), 73 (5).

2-Amino-3-methylbutanamide (86, MW = 116 g/mol)



GC-MS (EI, 70eV): 39 (8), 41 (7), 43 (5), 44 (12), 55 (50), 56 (15), 57 (16), 72 (100), 73 (14), 116 (0.02).

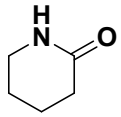
Piperidine (87, MW = 85 g/mol)



GC-MS (EI, 70eV): 39 (11), 41 (12), 42 (19), 43 (14), 44 (18), 55 (8), 56 (48), 57 (32), 70 (11), 84 (100), 85 (51).

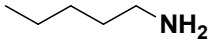
^{1}H-NMR (400 MHz, methanol-d4): δ (ppm) = 2.78 (t, 4H, -NH-C**H$_2$**-), 1.34 (s, 6H, -NH-CH$_2$-C**H$_2$**-C**H$_2$**-C**H$_2$**-).

2-Piperidinone (88, MW = 99 g/mol)



GC-MS (EI, 70eV): 39 (22), 40 (7), 41 (42), 42 (52), 43 (45), 44 (5), 55 (27), 56 (11), 70 (20), 71 (10), 98 (20), 99 (100).

Pentylamine (89, MW = 87 g/mol)

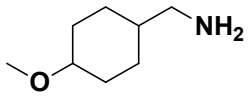


GC-MS (EI, 70eV): 38 (11), 39 (85), 40 (15), 41 (92), 42 (65), 43 (34), 44 (33), 45 (62), 50 (7), 51 (8), 52 (6), 53 (9), 54 (12), 55 (22), 56 (27), 58 (5), 69 (9), 70 (5), 86 (12), 87 (100), 88 (10).

Tetrahydrofuran (90, MW = 72 g/mol)

GC-MS (EI, 70eV): 38 (6), 39 (30), 40 (13), 41 (61), 42 (100), 43 (24), 44 (6), 71 (45), 72 (46).

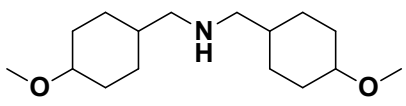
(4-methoxycyclohexyl)methylamine (91, MW = 143 g/mol)



GC-MS (cis) (EI, 70eV): 39 (46), 40 (7), 41 (68), 42 (17), 43 (44), 44 (6), 45 (24), 51 (8), 52 (5), 53 (26), 54 (38), 55 (39), 56 (51), 57 (12), 58 (84), 59 (8), 60 (15), 65 (9), 66 (8), 67 (100), 68 (16), 69 (9), 70 (15), 71 (35), 72 (6), 77 (21), 78 (5), 79 (50), 80 (38), 81 (55), 82 (43), 83 (11), 84 (10), 91 (12), 93 (14), 94 (68), 95 (22), 96 (6), 97 (71), 98 (14), 110 (15), 111 (21), 112 (99), 113 (11), 126 (80), 127 (8), 128 (51), 143 (6).

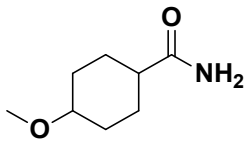
GC-MS (trans) (EI, 70eV): 39 (32), 40 (5), 41 (50), 42 (12), 43 (31), 44 (5), 45 (15), 51 (6), 53 (19), 54 (37), 55 (25), 56 (35), 57 (8), 58 (52), 59 (5), 60 (6), 65 (7), 66 (7), 67 (91), 68 (12), 69 (6), 70 (15), 71 (20), 77 (14), 79 (42), 80 (30), 81 (40), 82 (36), 83 (7), 91 (7), 93 (8), 94 (79), 95 (17), 96 (5), 97 (15), 98 (5), 110 (7), 111 (63), 112 (100), 113 (10).

Bis((4-methoxycyclohexyl)methyl)amine (92, MW = 269 g/mol)



GC-MS (EI, 70eV): 41 (12), 43 (6), 44 (20), 45 (6), 55 (7), 58 (5), 67 (11), 71 (7), 81 (6), 93 (7), 95 (20), 124 (48), 125 (5), 156 (100), 157 (10), 238 (10), 254 (8), 269 (2).

4-Methoxycyclohexanecarboxamide (93, MW = 157 g/mol)



GC-MS (EI, 70eV): 39 (21), 40 (6), 41 (31), 42 (5), 43 (23), 44 (36), 45 (10), 53 (12), 54 (11), 55 (24), 56 (6), 57 (4), 58 (100), 59 (9), 67 (15), 68 (5), 69 (7), 71 (41), 72 (15), 77 (7), 79 (17), 80 (8), 81 (34), 82 (16), 83 (6), 85 (7), 86 (5), 96 (17), 97 (16), 98 (5), 108 (5), 111 (7), 112 (6), 114 (9), 125 (47), 126 (10), 127 (14), 128 (7), 129 (42), 140 (18), 142 (14), 157 (5).

8. References supporting information

(1) Coeck, R., et al. *Green Chemistry*, **2019**, *21*, 5326–5335.
(2) Babij, N. R., et al. *Organic Process Research and Development*, **2016**, *20*, 661–667.