Electronic Supplementary Material (ESI) for Organic & Biomolecular Chemistry.

A Short and Modular Approach towards 3,5-Disubstituted Indolizidine Alkaloids

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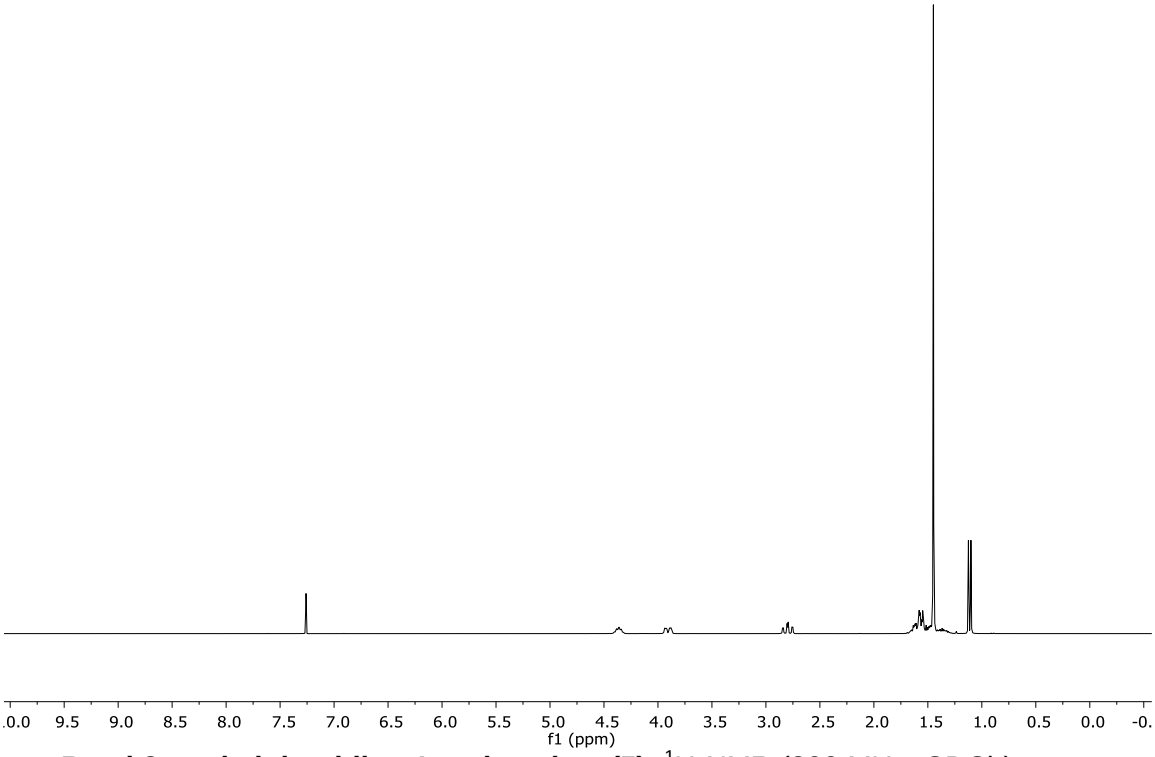
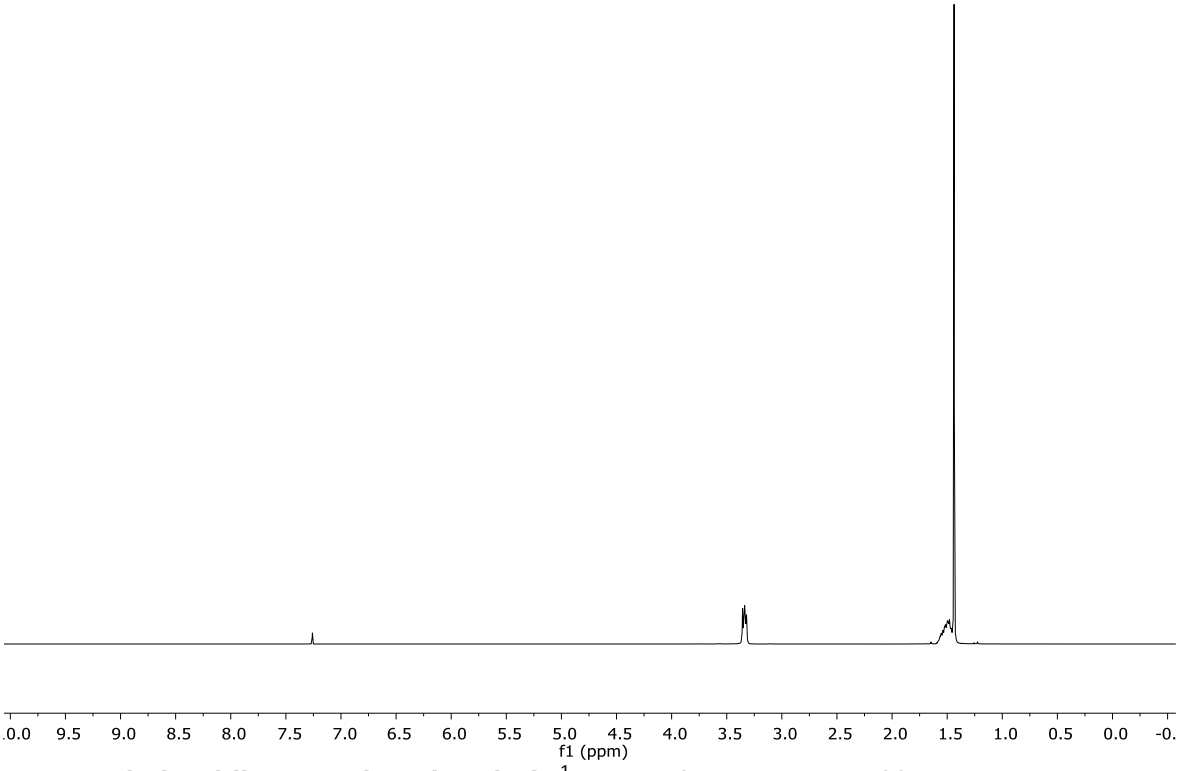
Supporting Information

Content

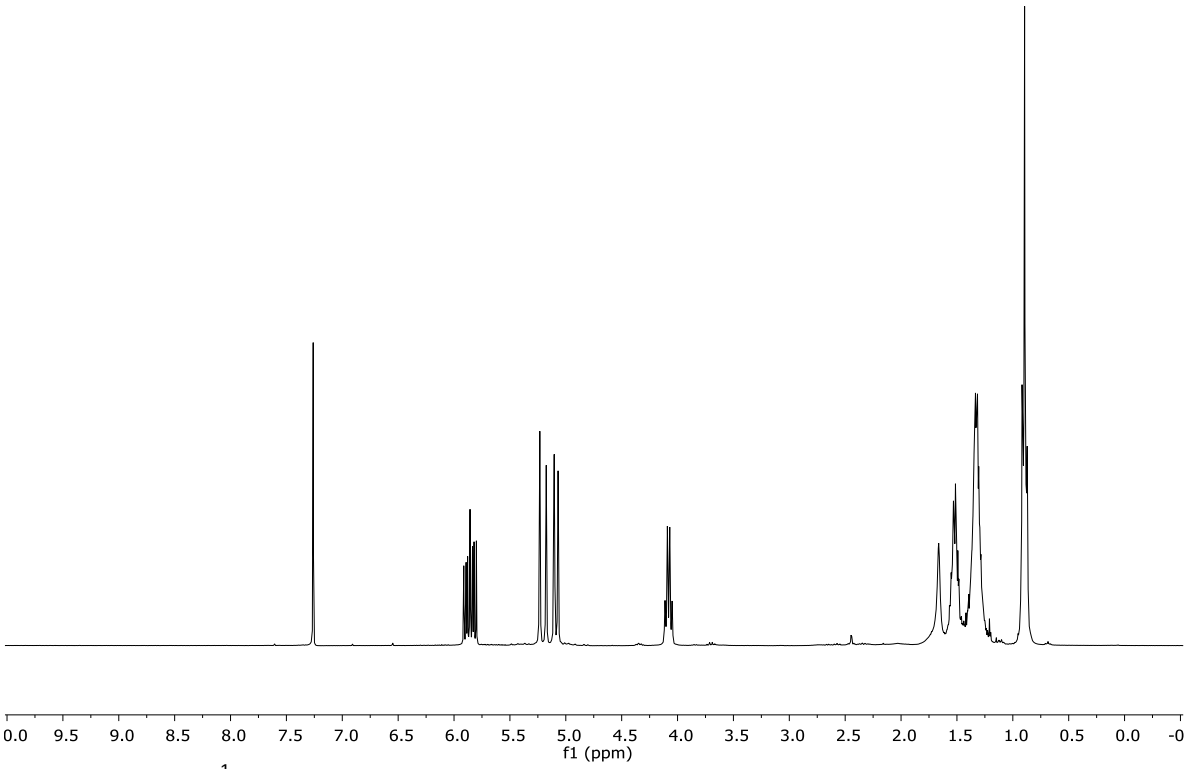
^{1}H and ^{13}C NMR spectra



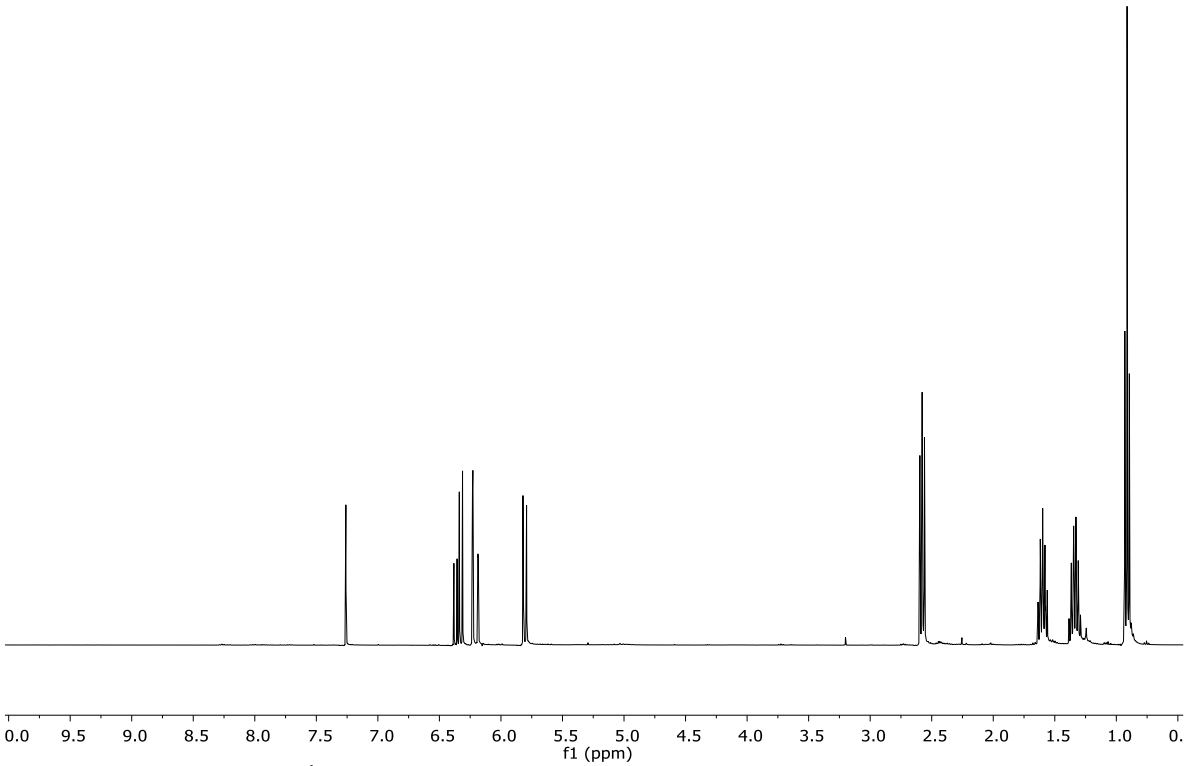
***tert*-Butyl 2-methylpiperidine-1-carboxylate (5):** ^{1}H-NMR (300 MHz, $CDCl_3$).



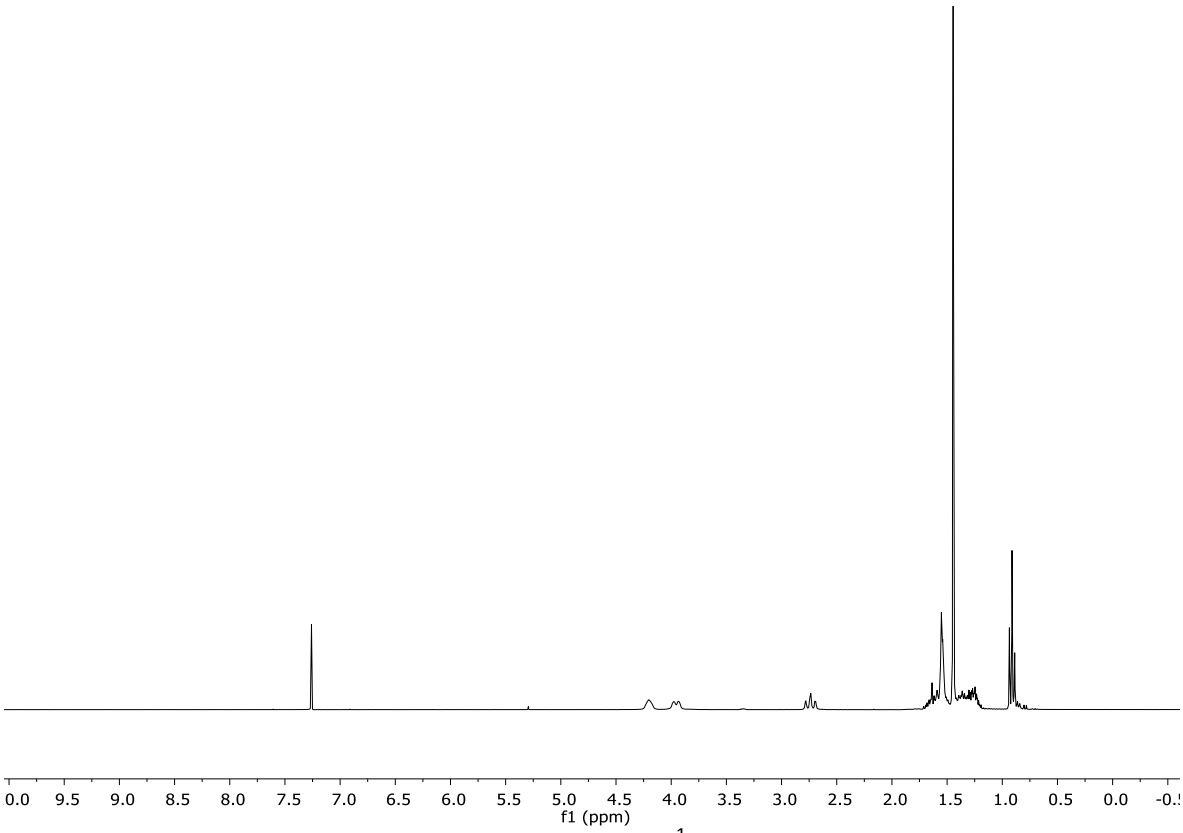
***tert*-Butyl piperidine-1-carboxylate (14):** ^{1}H-NMR (300 MHz, $CDCl_3$).



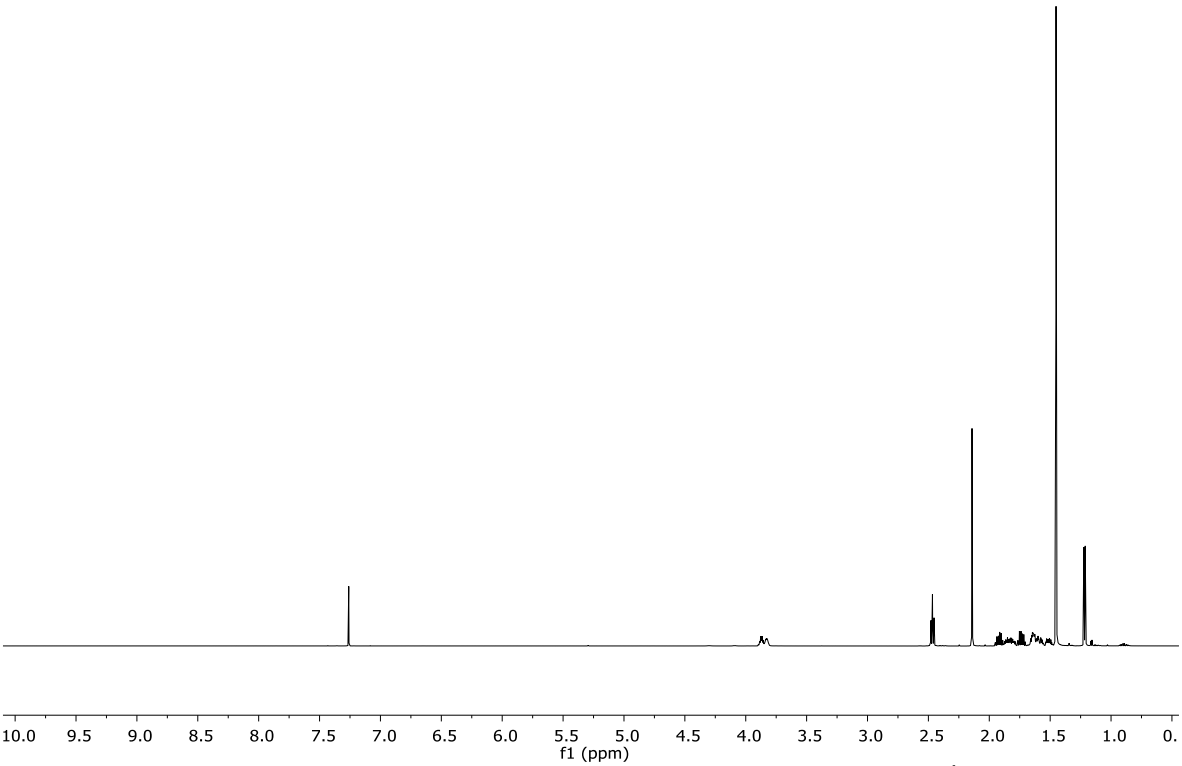
Hept-1-en-3-ol: ^{1}H-NMR (300 MHz, $CDCl_3$).



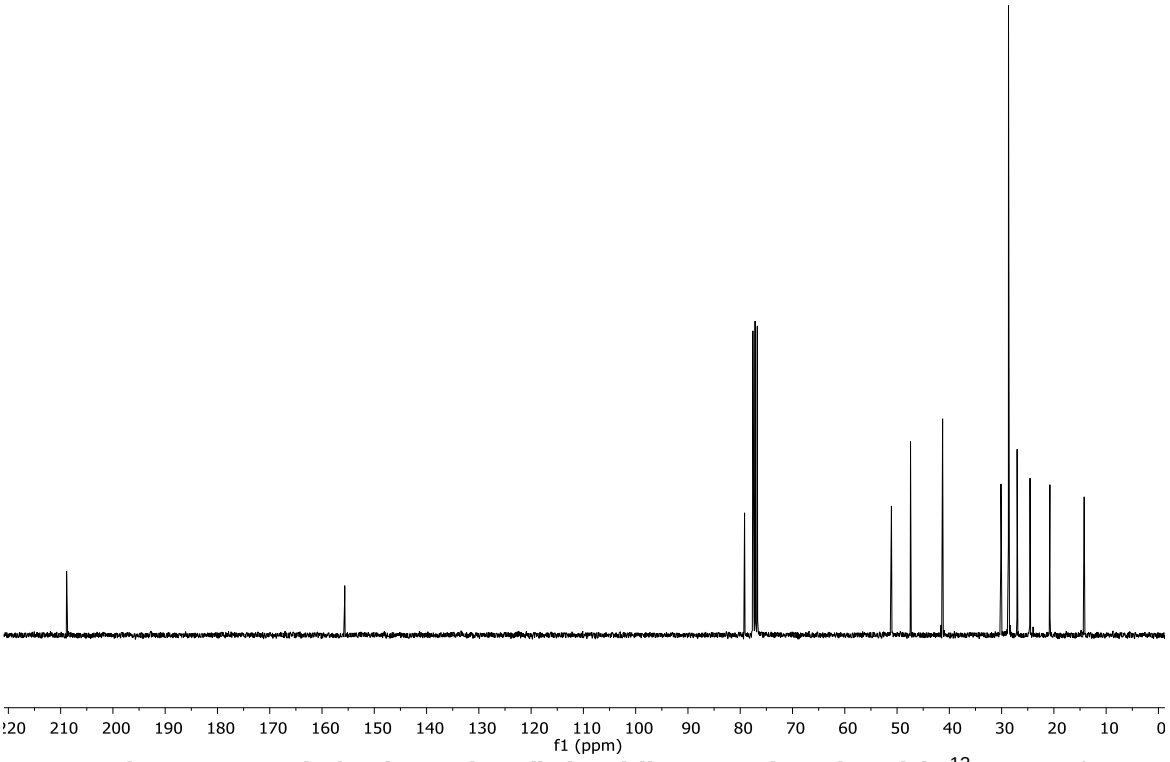
Hept-1-en-3-one (17): ^{1}H-NMR (400 MHz, $CDCl_3$).



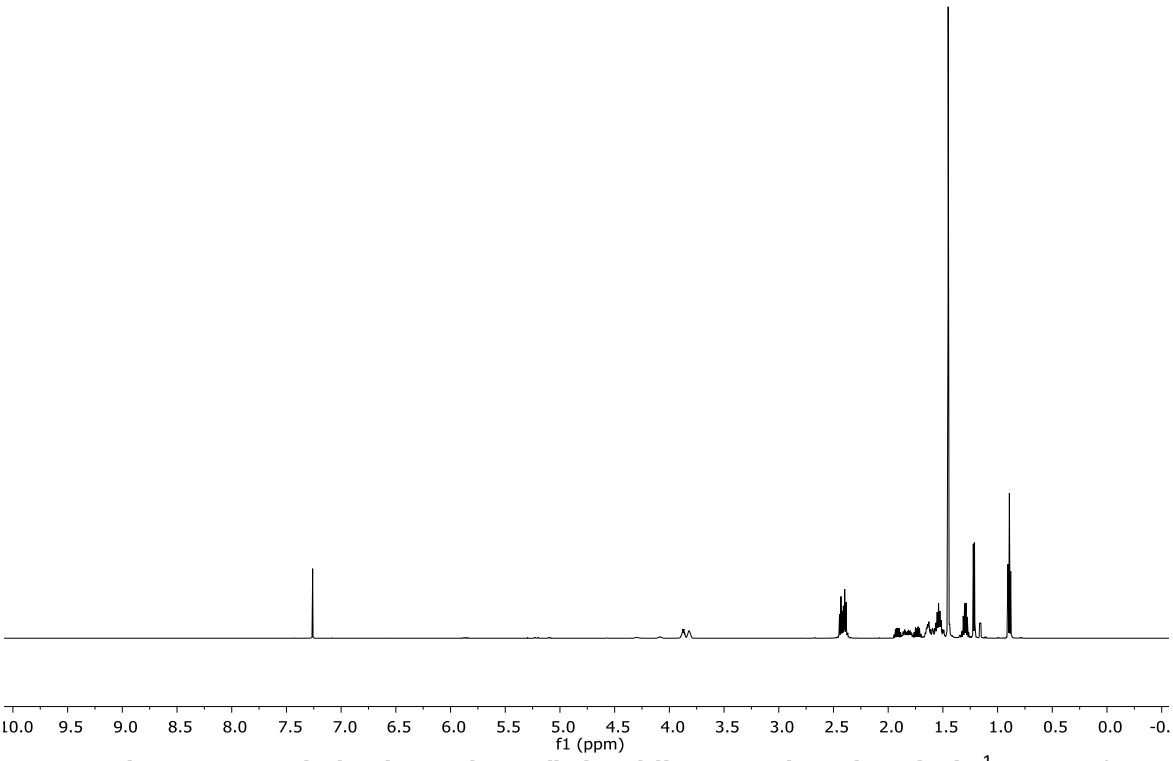
***tert*-Butyl 2-propylpiperidine-1-carboxylate (15):** ^{1}H-NMR (300 MHz, $CDCl_3$).



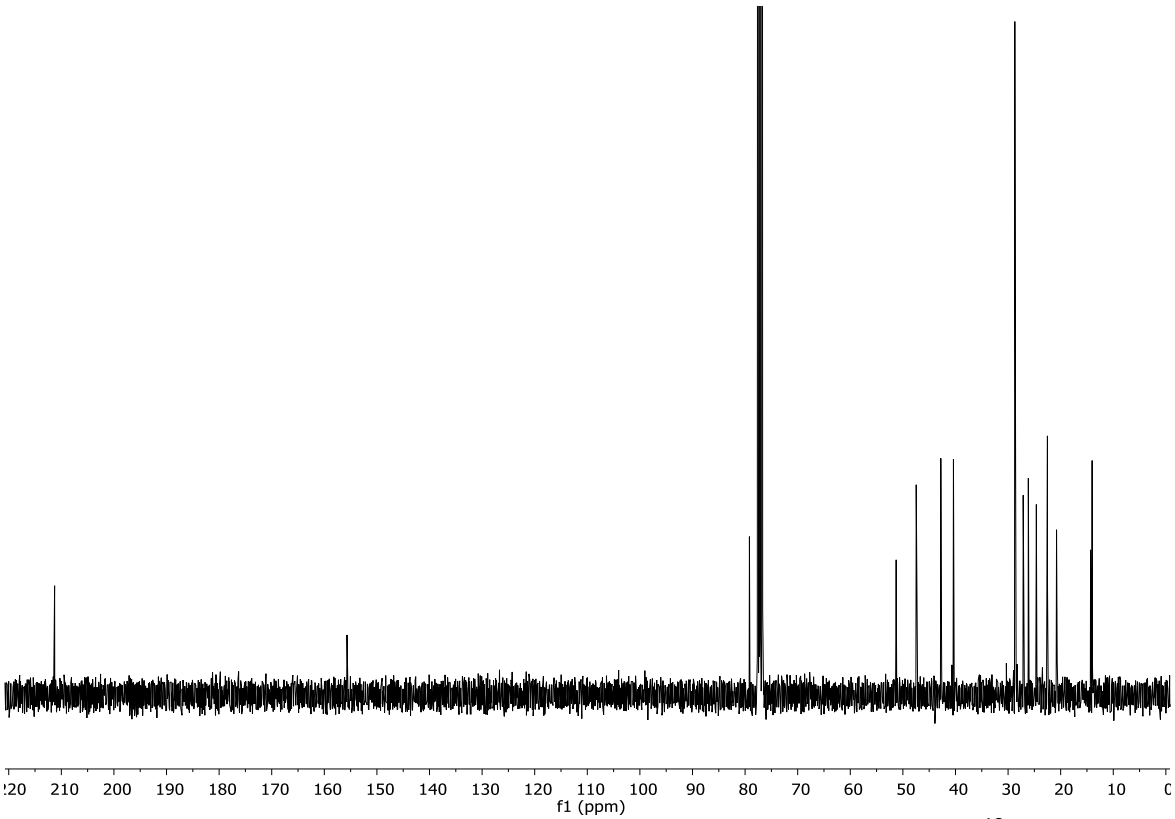
***tert*-Butyl *trans*-2-methyl-6-(3-oxobutyl)piperidine-1-carboxylate (9):** ^{1}H-NMR (600 MHz, $CDCl_3$).



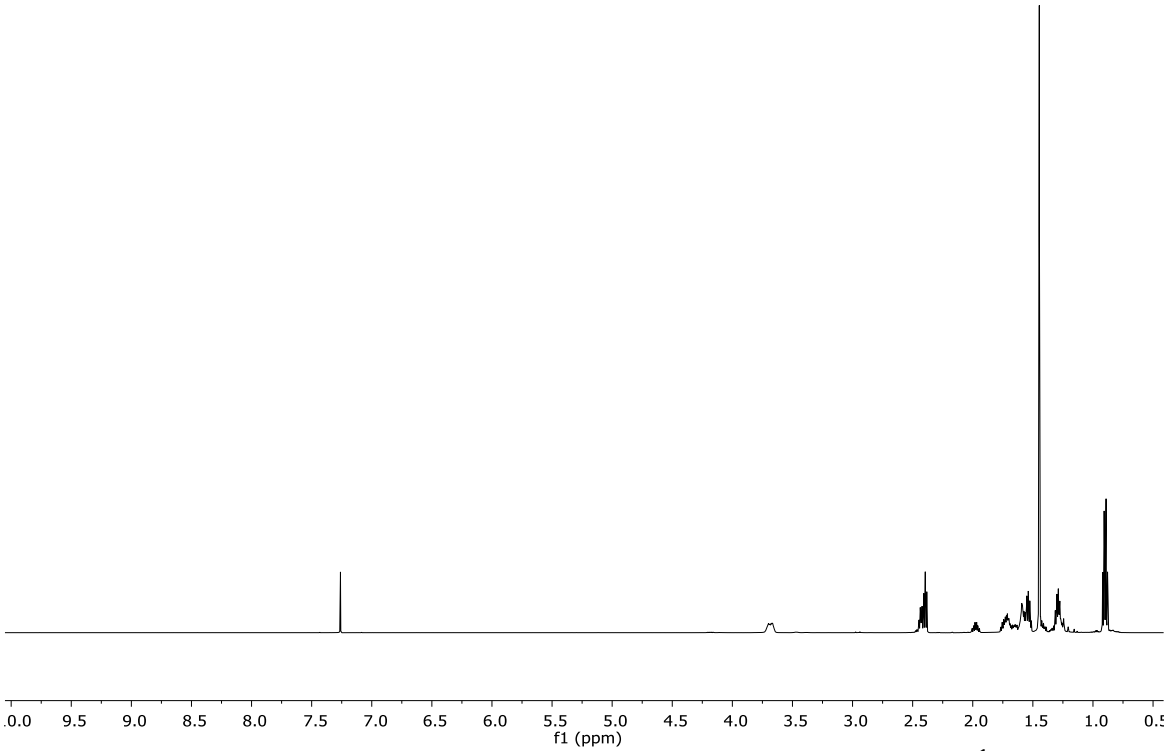
***tert*-Butyl *trans*-2-methyl-6-(3-oxobutyl)piperidine-1-carboxylate (9):** ^{13}C-NMR (75.5 MHz, $CDCl_3$).



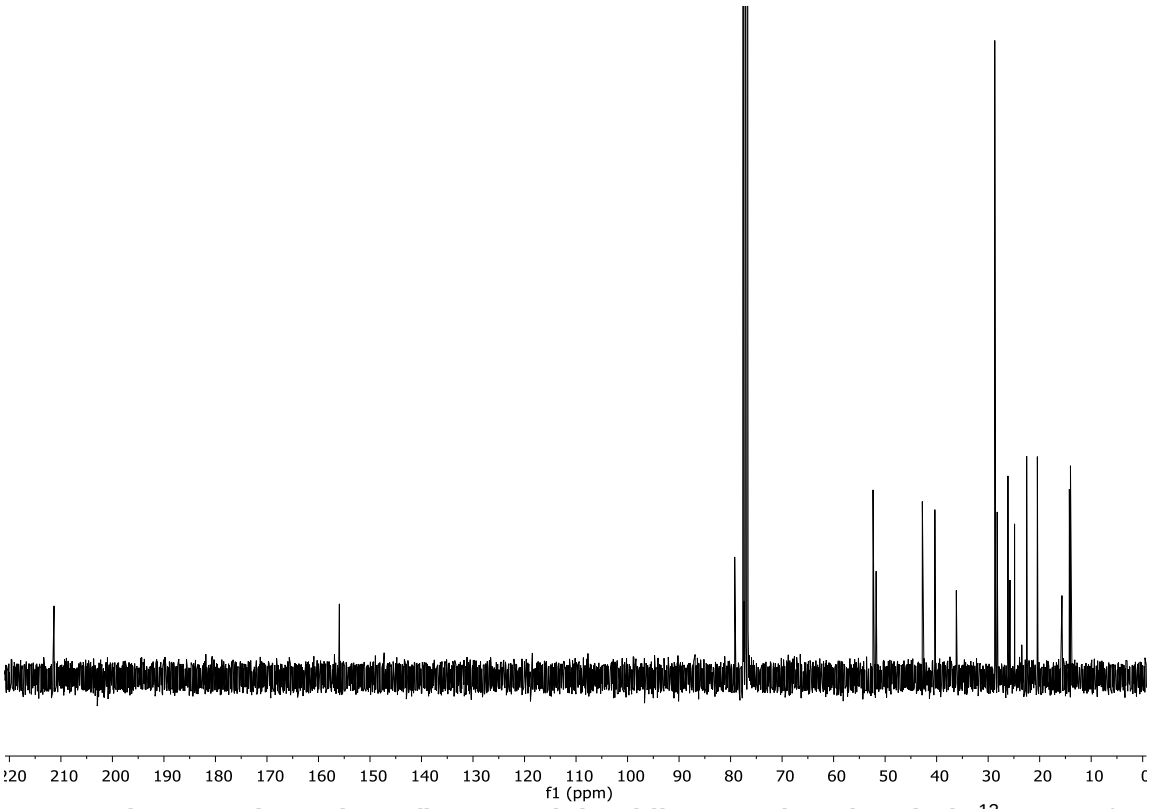
***tert*-Butyl *trans*-2-methyl-6-(3-oxoheptyl)piperidine-1-carboxylate (18):** ^{1}H-NMR (600 MHz, $CDCl_3$).



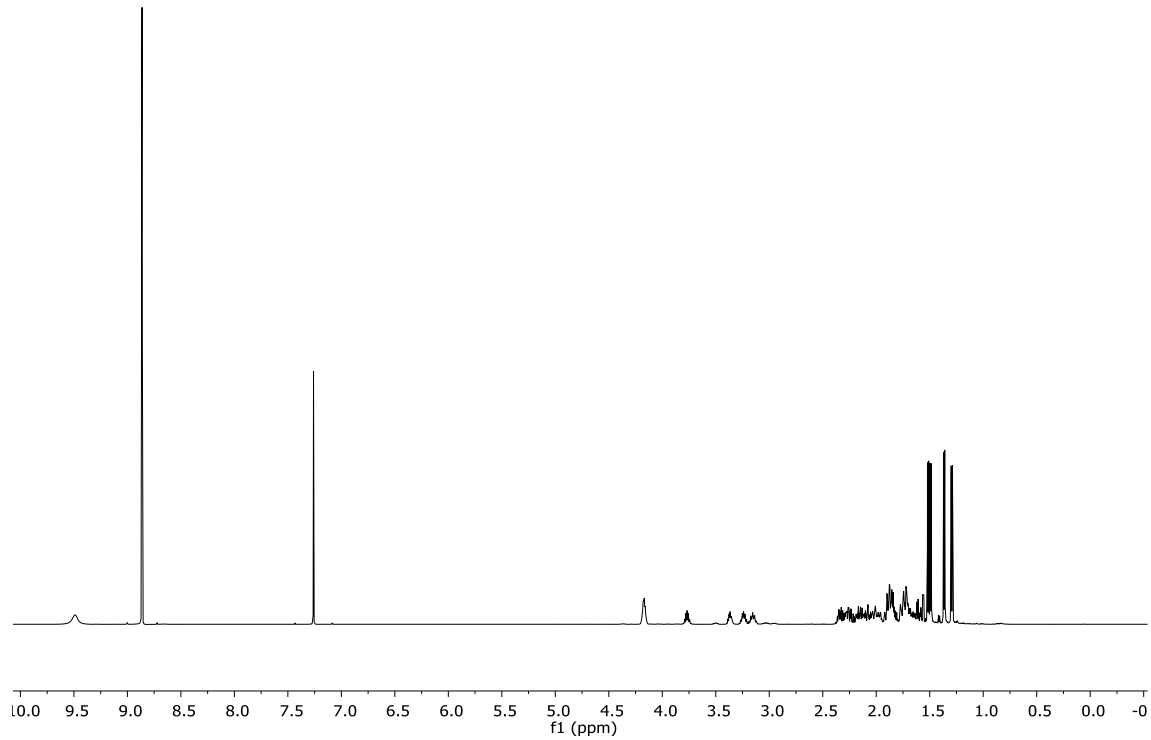
***tert*-Butyl *trans*-2-methyl-6-(3-oxoheptyl)piperidine-1-carboxylate (18):** ^{13}C-NMR (75.5 MHz, $CDCl_3$).



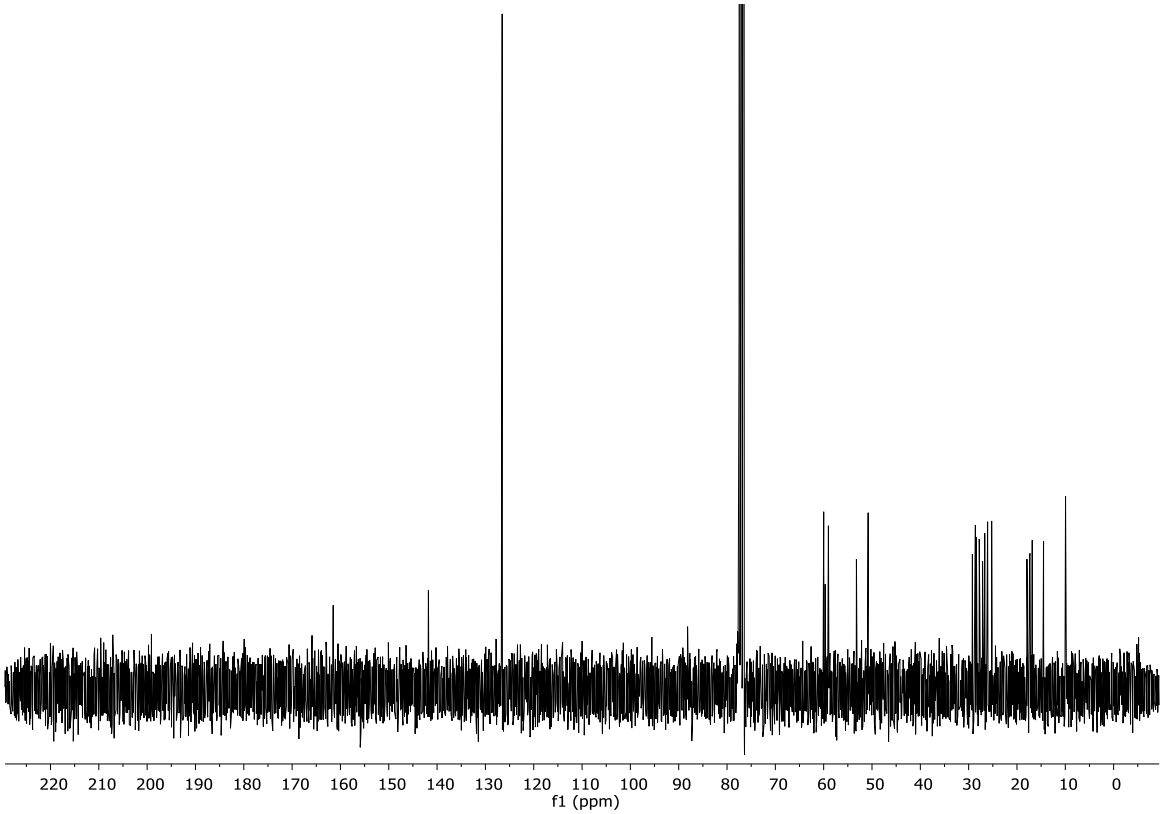
***tert*-Butyl *trans*-2-(3-oxoheptyl)-6-propylpiperidine-1-carboxylate (19):** ^{1}H-NMR (600 MHz, $CDCl_3$).



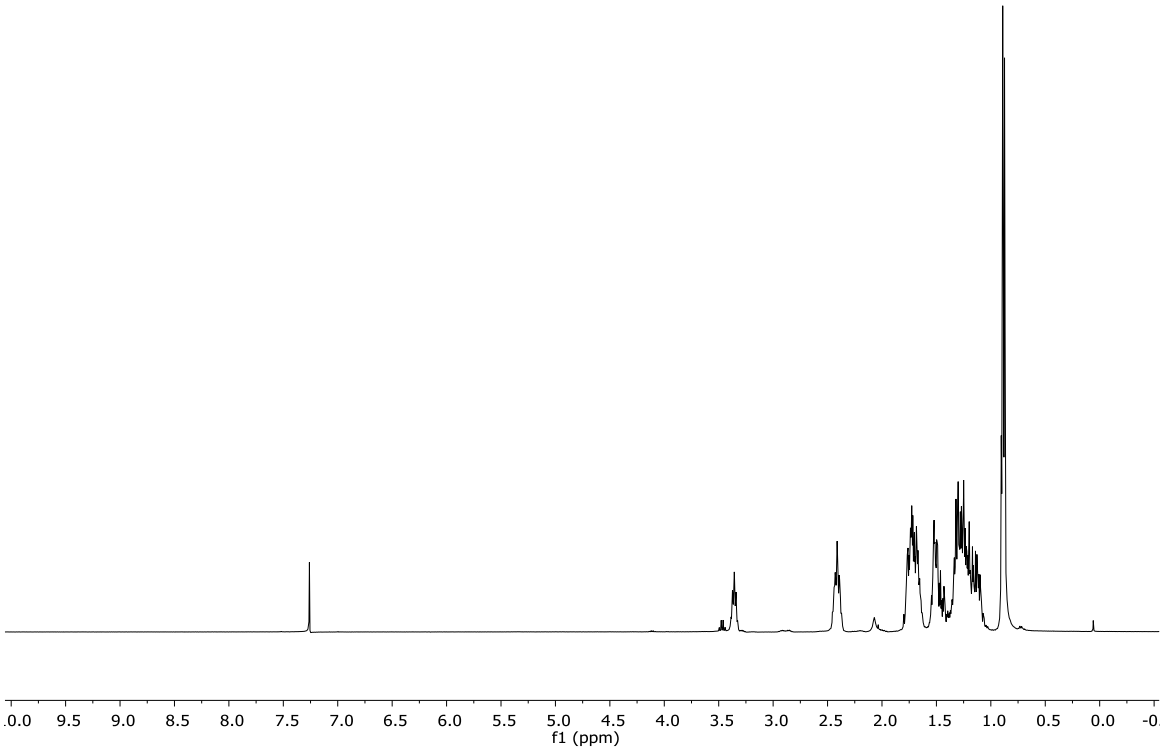
***tert*-Butyl *trans*-2-(3-oxoheptyl)-6-propylpiperidine-1-carboxylate (19):** ^{13}C-NMR (75.5 MHz, $CDCl_3$).



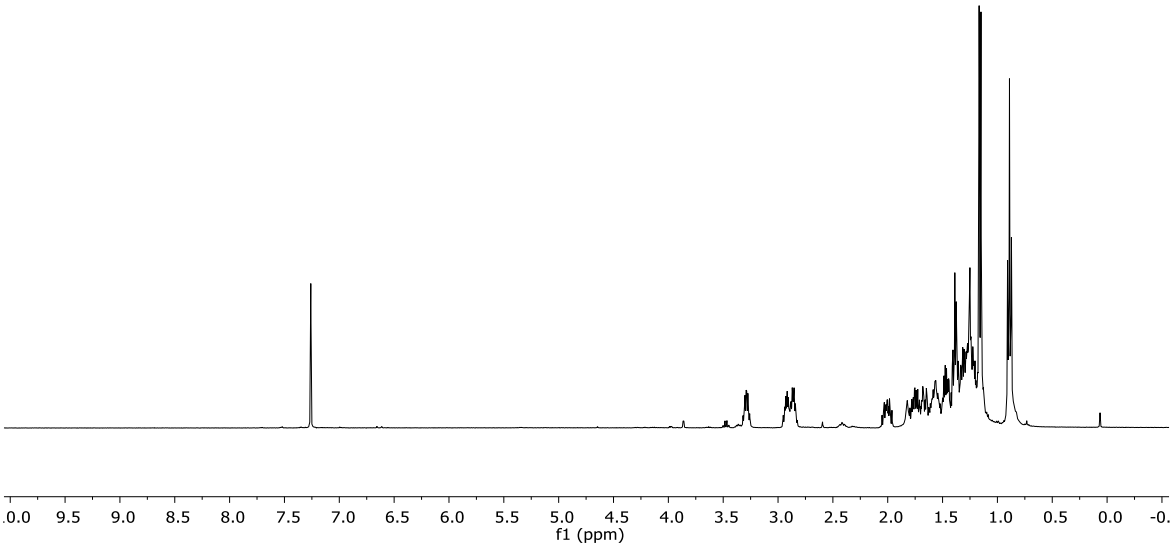
Mixture of (5*E*,9*Z*)-3,5-Dimethyloctahydroindolizinium 2,4,6-trinitrophenolate (12a) and (5*Z*,9*E*)-3,5-Dimethyloctahydroindolizinium 2,4,6-trinitrophenolate (12b): ^{1}H-NMR (600 MHz, $CDCl_3$).



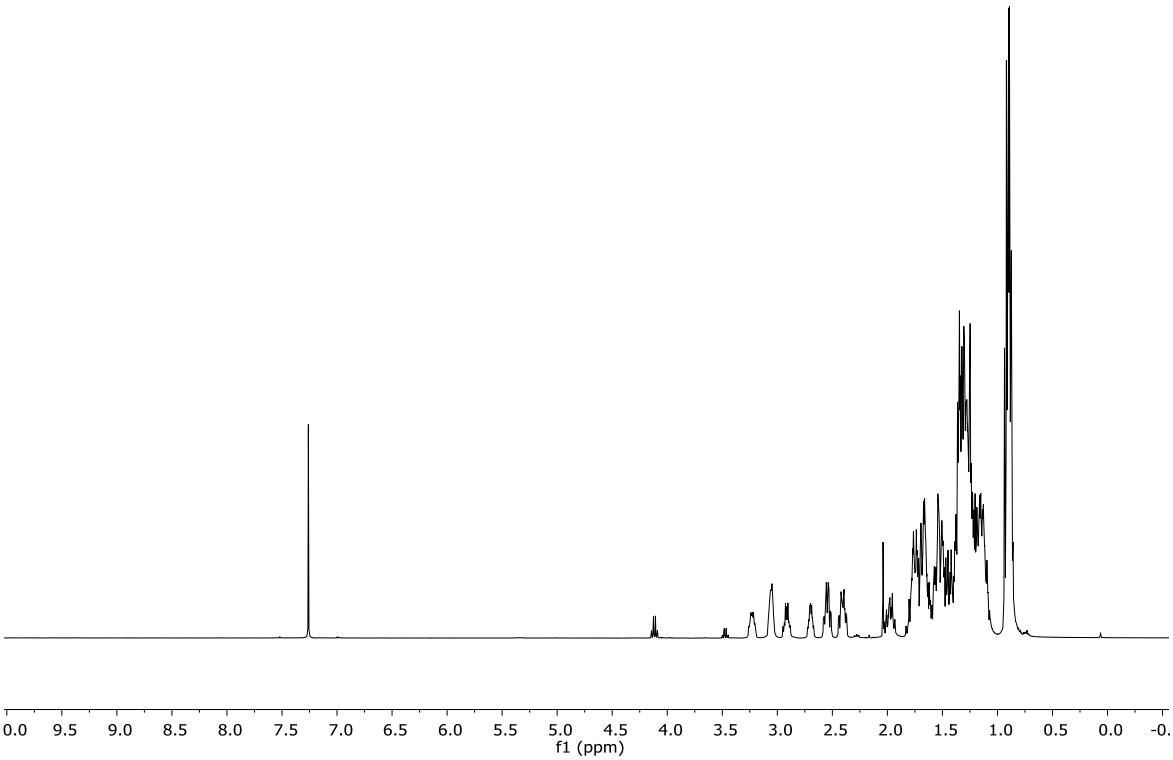
Mixture of (5*E*,9*Z*)-3,5-Dimethyloctahydroindolizinium 2,4,6-trinitrophenolate (12a) and (5*Z*,9*E*)-3,5-Dimethyloctahydroindolizinium 2,4,6-trinitrophenolate (12b): ^{13}C-NMR (75.5 MHz, $CDCl_3$).



(5*E*,9*Z*)-3-Butyl-5-methyloctahydroindolizine (2a): ^{1}H-NMR (400 MHz, $CDCl_3$).

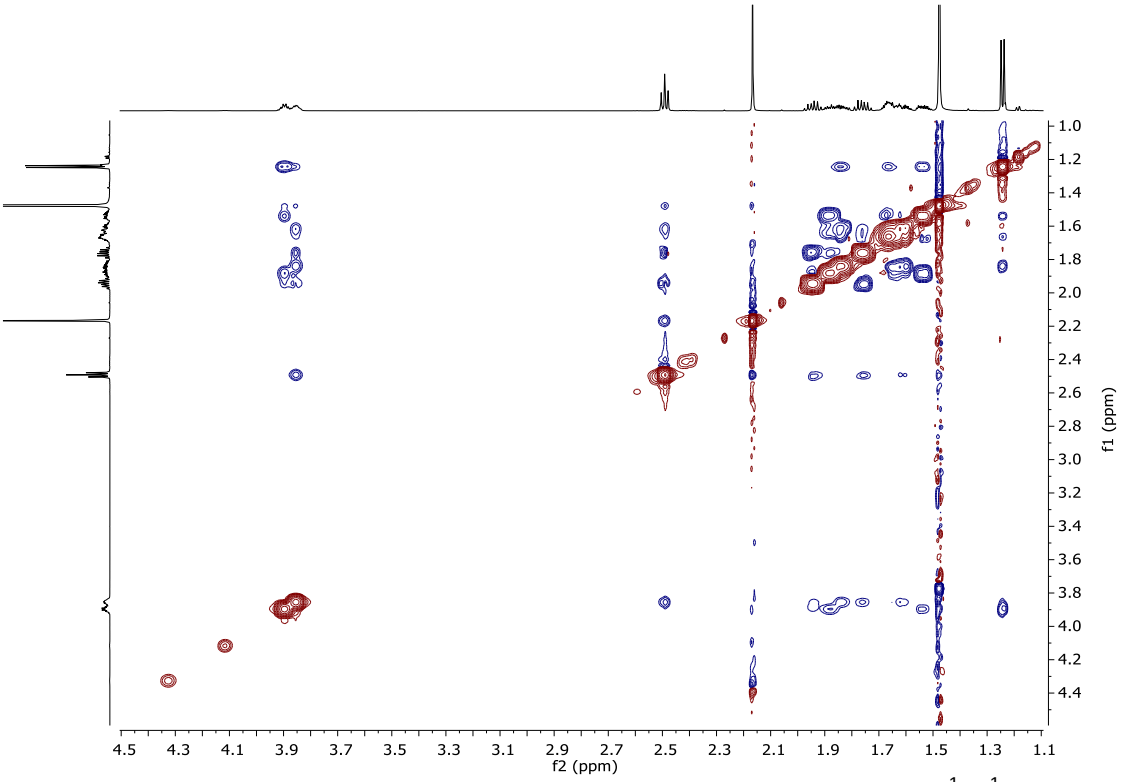


(5*Z*,9*E*)-3-Butyl-5-methyloctahydroindolizine (2b): ^{1}H-NMR (400 MHz, $CDCl_3$).

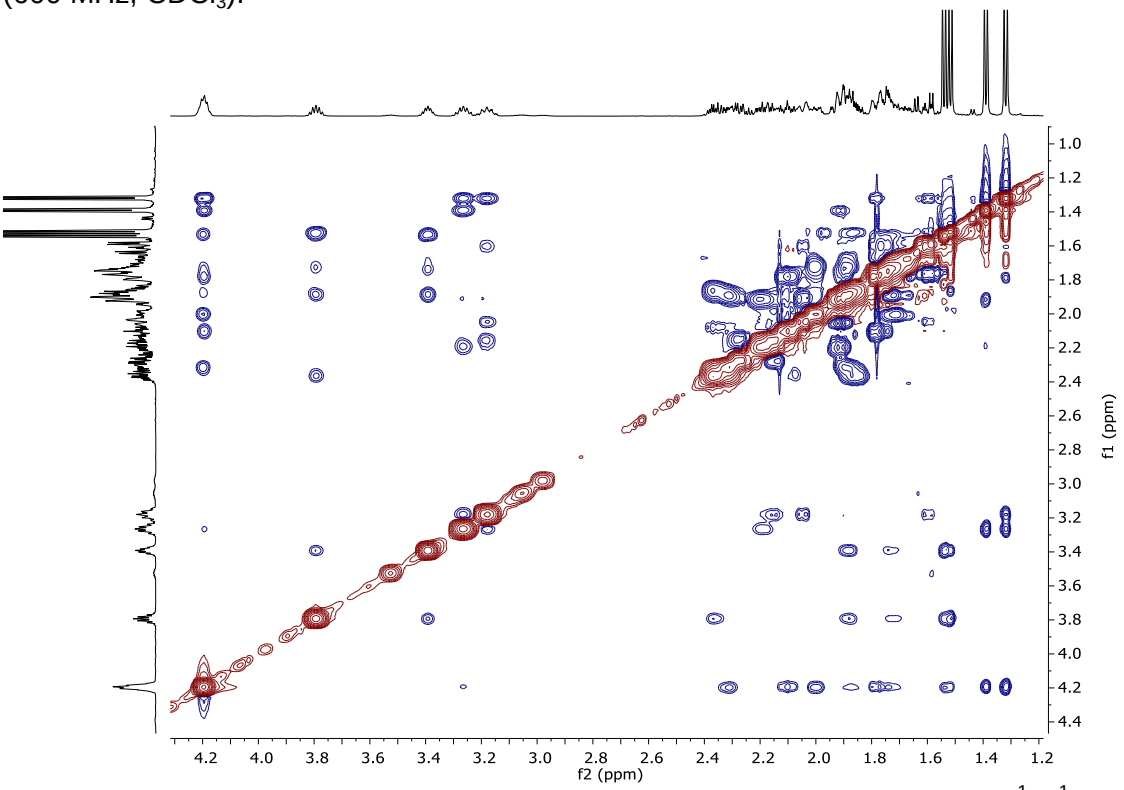


Mixture of (5*E*,9*Z*)-3-Butyl-5-methyloctahydroindolizine (3a) and (5*Z*,9E)-3-Butyl-5-methyloctahydroindolizine (3b): ^{1}H-NMR (400 MHz, $CDCl_3$).

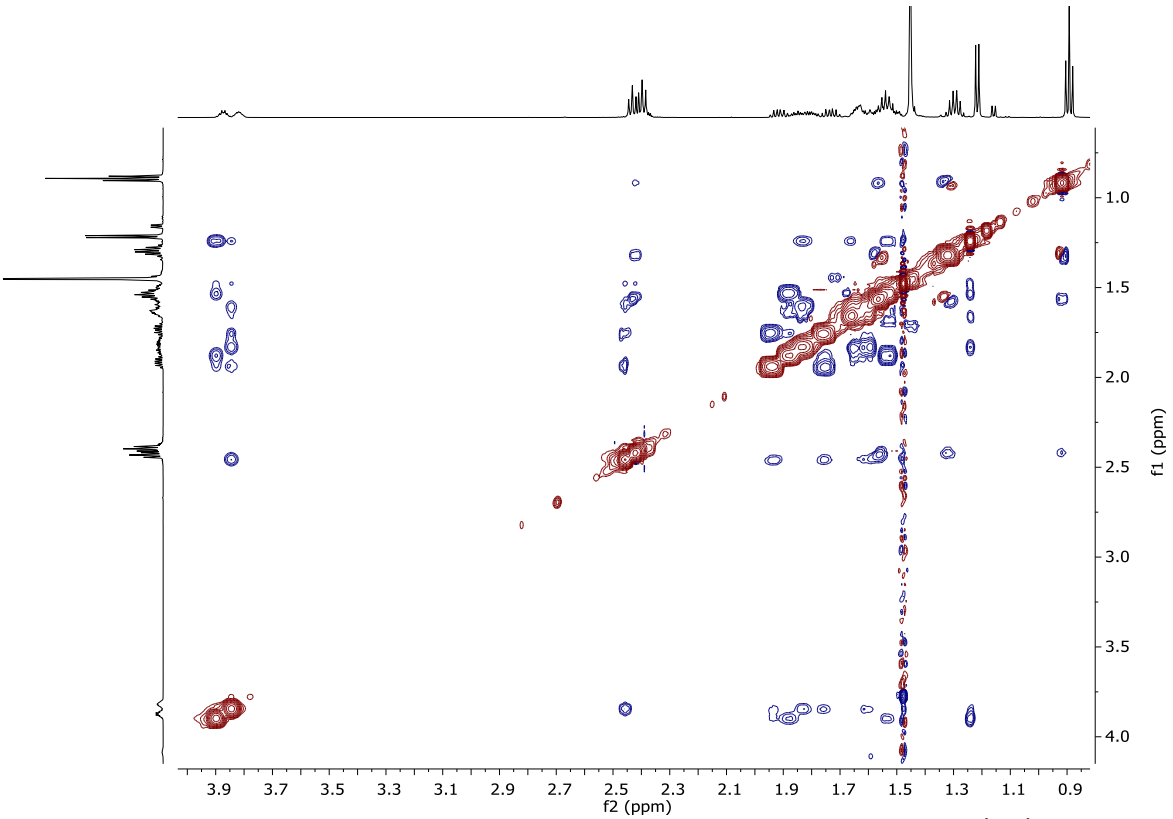
^{1}H-^{1}H-NOE-spectra of compounds 9, 12, 18 and 19



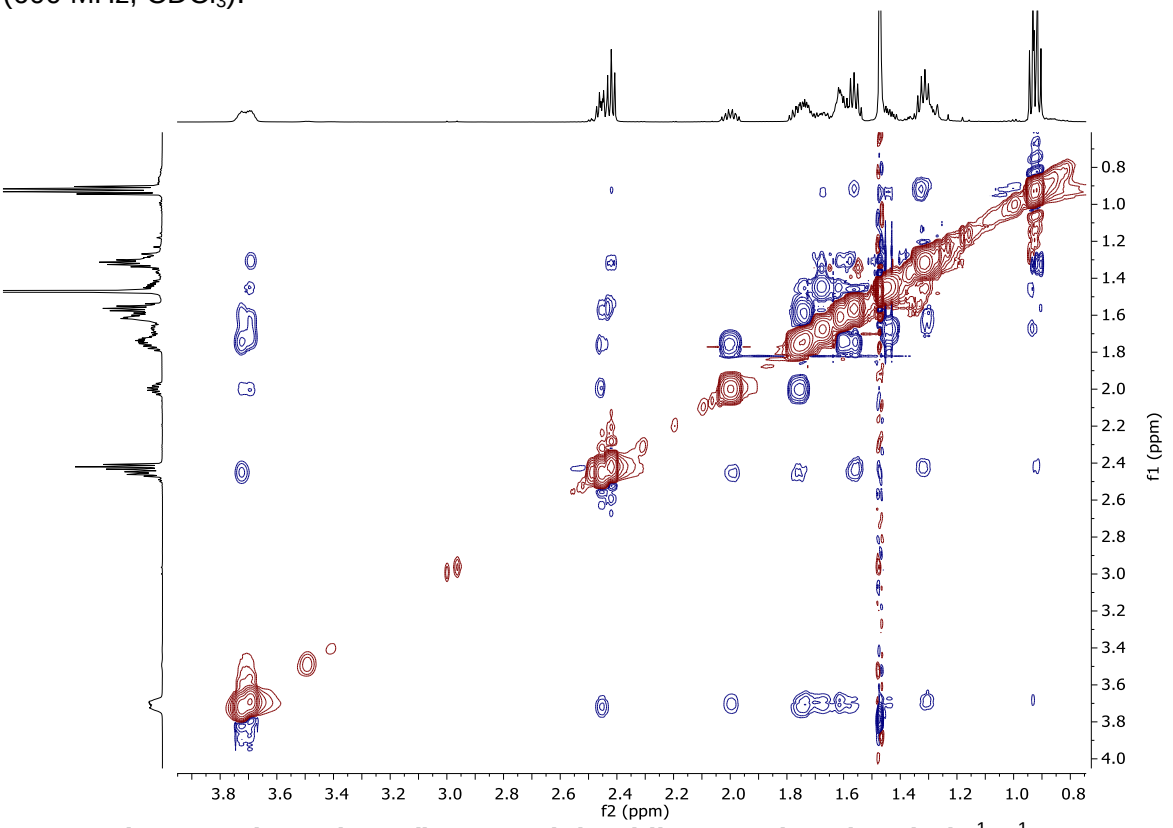
***tert*-Butyl *trans*-2-methyl-6-(3-oxobutyl)piperidine-1-carboxylate (9):** ^{1}H-^{1}H-NOESY (600 MHz, $CDCl_3$).



5,9-*trans*-3,5-Dimethyloctahydroindolizinium 2,4,6-trinitrophenolate (12): ^{1}H-^{1}H-NOESY (600 MHz, $CDCl_3$).



***tert*-Butyl *trans*-2-methyl-6-(3-oxoheptyl)piperidine-1-carboxylate (18):** ^{1}H-^{1}H-NOESY (600 MHz, $CDCl_3$).



***tert*-Butyl *trans*-2-(3-oxoheptyl)-6-propylpiperidine-1-carboxylate (19):** ^{1}H-^{1}H-NOESY (600 MHz, $CDCl_3$).