Supporting Information for:

Neutral and Cationic Bismuth Compounds Supported by Bis(amidodimethyl)disiloxane Ligands

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Figure S1 ^{1}H NMR spectrum (300 MHz, C_6D_6) of Bi(NON$^{Ar'}$)Cl (**1b**)

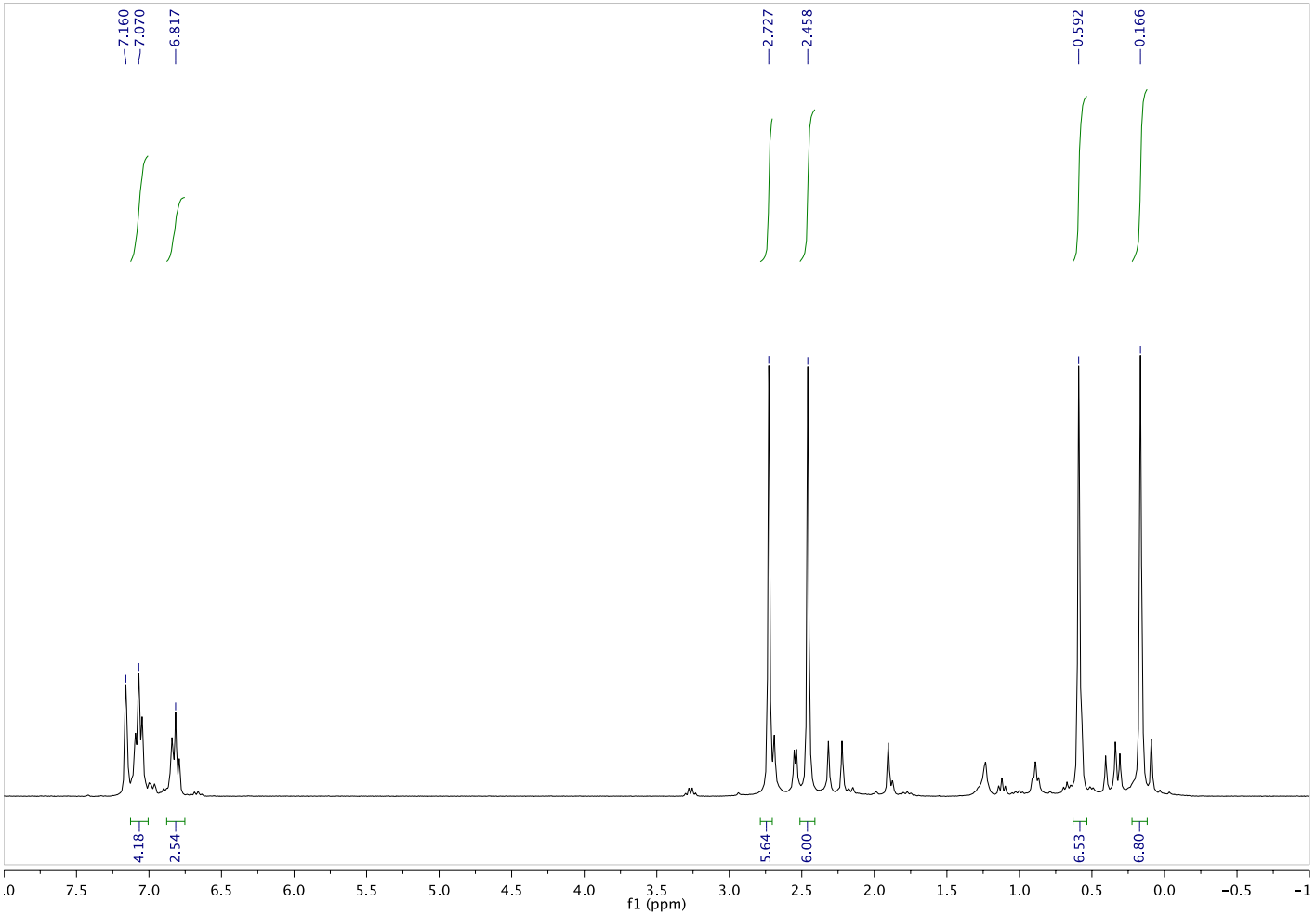

Figure S2 $^{13}C\{^{1}H\}$ NMR spectrum (75 MHz, C_6D_6) of Bi(NON$^{Ar'}$)Cl (**1b**)

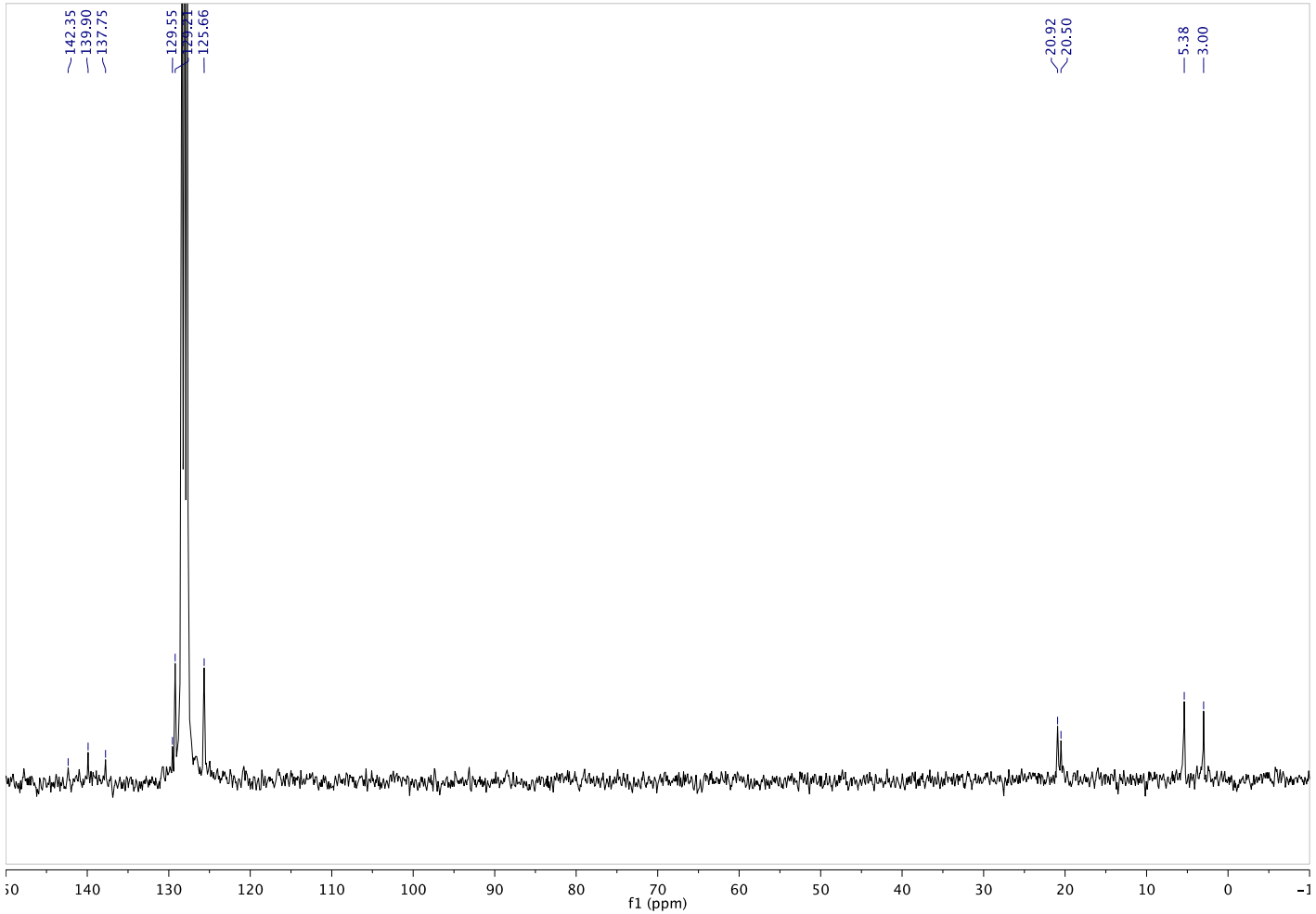

Figure S3 ^{1}H NMR spectrum (300 MHz, C_6D_6) of {Bi(NON$^{Ar'}$)}$_2$(μ-NON$^{Ar'}$) (**2b**)

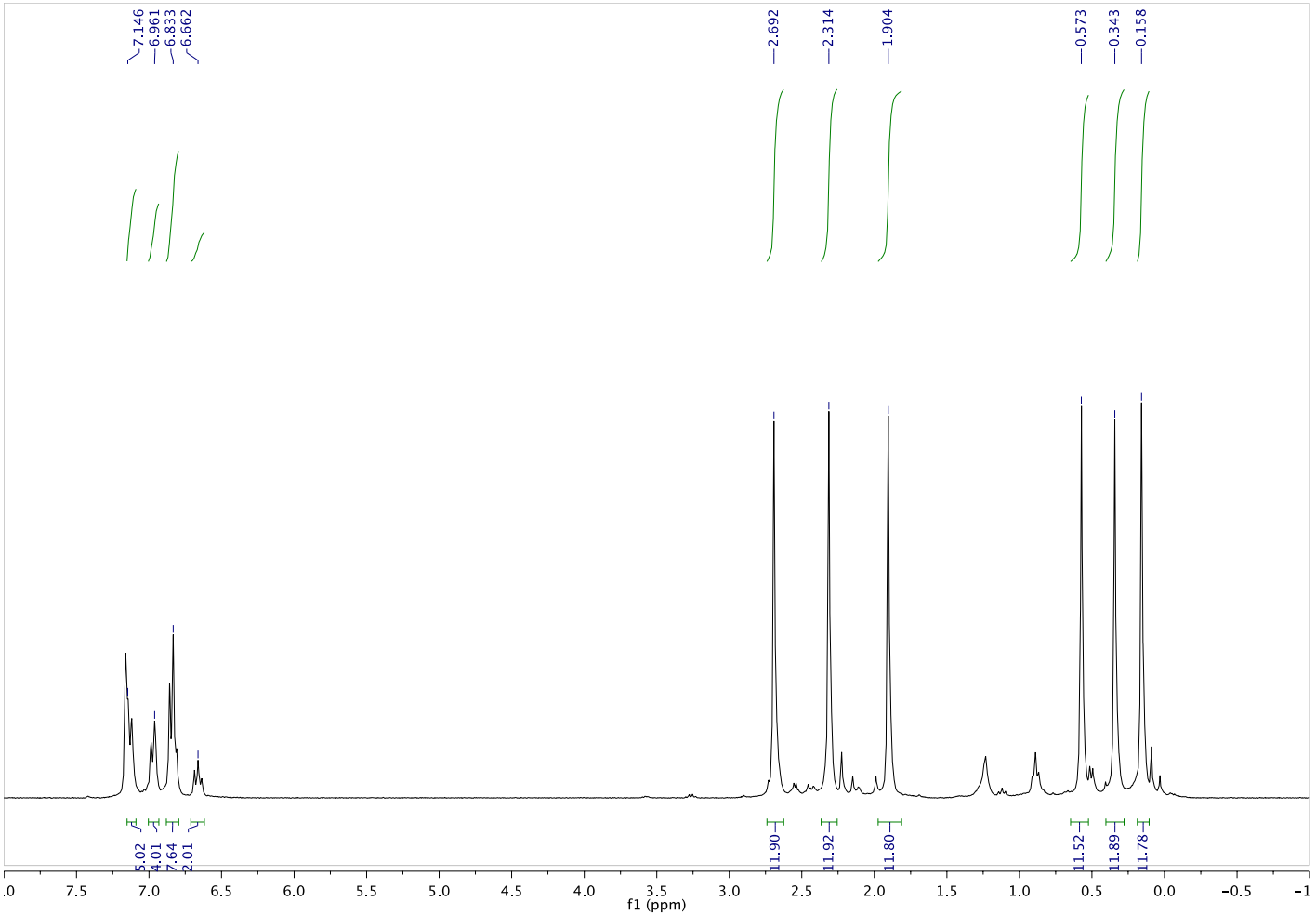

Figure S4 $^{13}C\{^{1}H\}$ NMR spectrum (75 MHz, C_6D_6) of $\{Bi(NON^{Ar'})\}_2(\mu\text{-}NON^{Ar'})$ (**2b**)

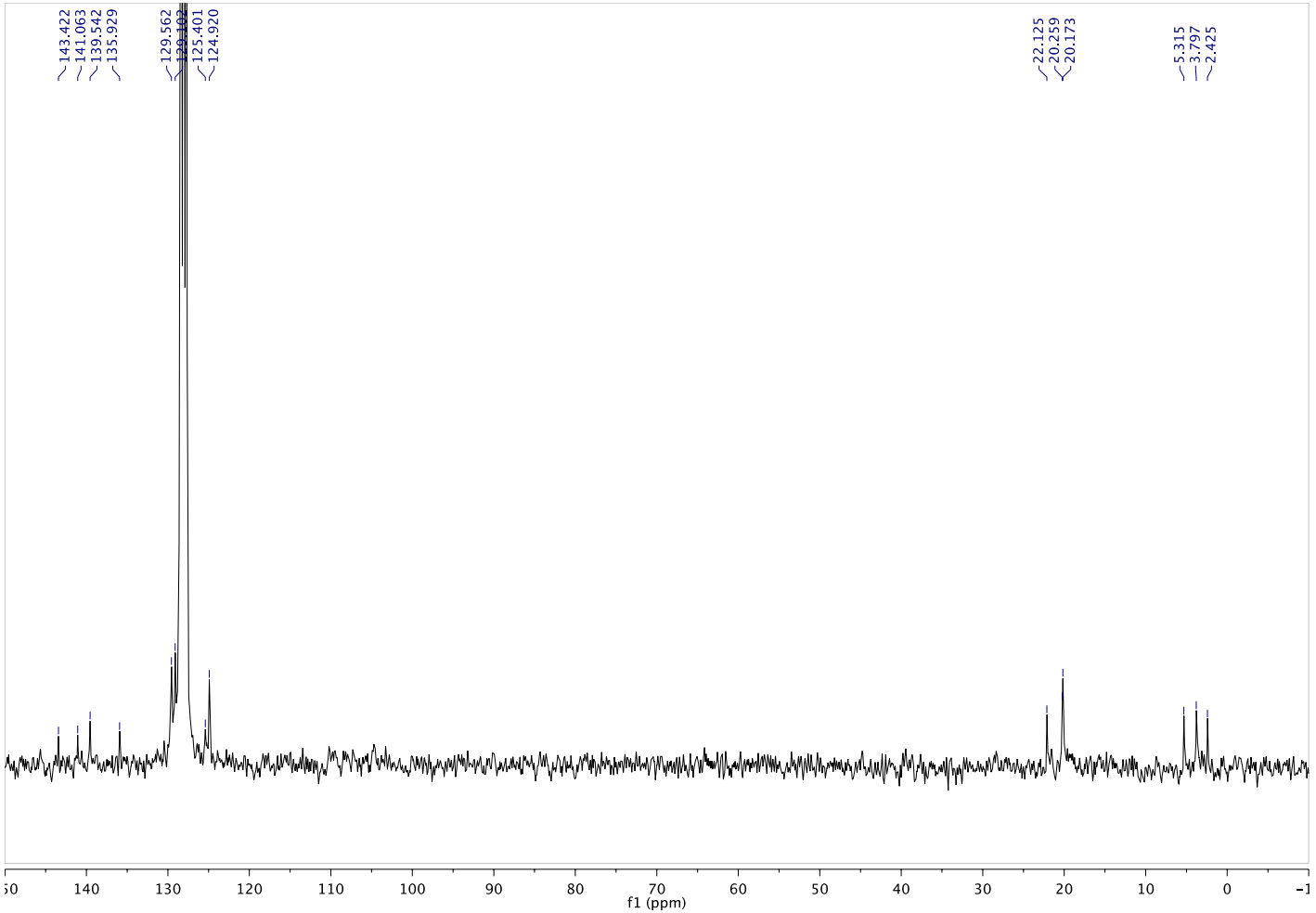

Figure S5 Solid-state dimers of [**1b**]$_2$ (top) and [**1c**]$_2$ (bottom). (a) ' 2–*x*, 2–*y*, –*z*. Bi···C14' 3.673(6) Å; Bi···C15' 3.540(6) Å; Bi···C16' 3.489(5) Å; Bi···C17' 3.496(5) Å; Bi···C18' 3.634(6) Å. (b) ' = 1–*x*, 1–*y*, 1–*z*. Bi···C19' 3.715(4) Å; Bi···C20' 3.753(4) Å.

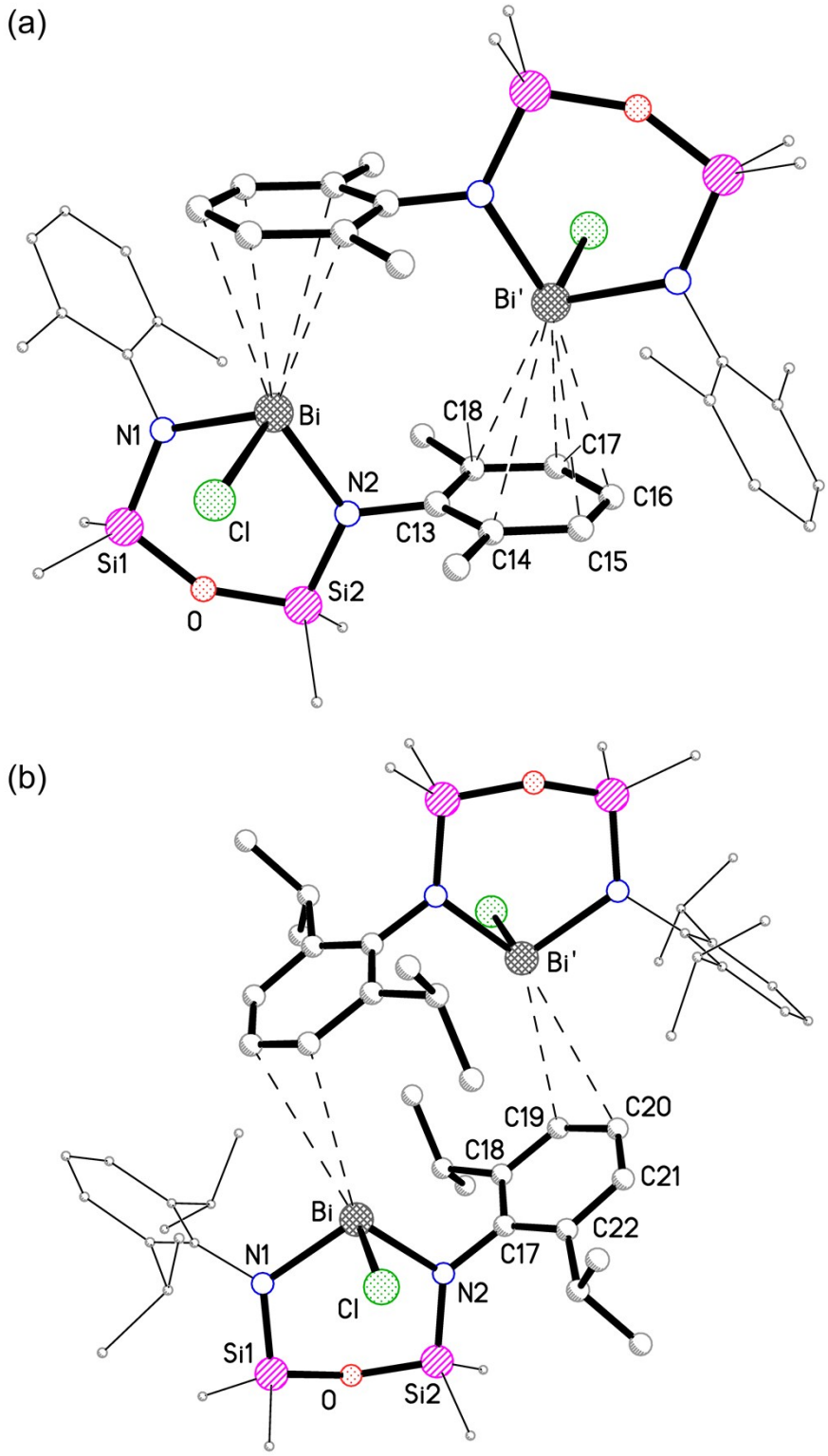

Table S1 Crystal structure and refinement data for Bi(NON$^{Ar'}$)Cl (**1b**), {Bi(NON$^{Ar'}$)}$_2$(μ-NON$^{Ar'}$) (**2b**), [Bi(NON$^{Ar'}$)][AlCl$_4$]·C$_7$H$_8$ (**3c**) and [Bi(NON$^{Ar'}$)][Ga$_2$Cl$_7$] (**4c**)

	1b	**2b**	**3c**	**4c**
CCDC number	1528433	1528434	1528435	1528436
Empirical formula	$C_{20}H_{30}BiClN_2OSi_2$	$C_{60}H_{90}Bi_2N_6O_3Si_6$	$C_{35}H_{54}AlBiCl_4N_2OSi_2$	$C_{28}H_{46}BiCl_7Ga_2N_2OSi_2$
M_r	615.07	1529.87	952.74	1079.42
Radiation (wavelength [Å])	MoKα (λ = 0.71073)	CuKα (λ = 1.54184)	MoKα (λ = 0.71073)	MoKα (λ = 0.71073)
T [K]	173(2)	120.0(1)	120.01(10)	120.0(1)
Crystal size [mm]	0.10 × 0.08 × 0.04	0.21 × 0.17 × 0.06	0.46 × 0.31 × 0.22	0.41 × 0.29 × 0.16
Crystal system	triclinic	triclinic	triclinic	monoclinic
Space group	$P\bar{1}$ (No.2)	$P\bar{1}$ (No.2)	$P\bar{1}$ (No.2)	$P2_1/c$ (No.14)
a [Å]	9.8884(3)	11.7744(3)	10.5351(2)	10.0533(2)
b [Å]	10.6089(4)	15.3339(4)	10.8349(2)	10.2526(3)
c [Å]	12.3277(5)	19.9763(5)	18.5054(3)	39.4446(10)
α [°]	85.527(2)	102.811(2)	87.1030(13)	90
β [°]	76.827(2)	90.9255(19)	88.7719(13)	92.9450(19)
γ [°]	68.765(2)	107.564(2)	75.1549(15)	90
V [Å^3]	1173.70(7)	3339.50(16)	2039.14(6)	4060.27(16)
Z	2	2	2	4
$D_{calc.}$ [Mg m^{-3}]	1.74	1 52	1.55	1.77
Absorption coefficient [mm^{-1}]	7.739	11.608	4.695	6.186
θ range for data collection [°]	1.70 to 27.49	3.11 to 69.99	2.60 to 30.0	2.82 to 26.00
Reflections collected	17593	38204	73699	31043
Independent reflections (R_{int})	5299 (0.054)	12659 (0.039)	11894 (0.028)	7987 (0.050)
Data/restraints/parameters	5299 / 0 / 248	12659 / 0 / 718	11894 / 0 / 428	7987 / 12 / 400
Final R indices [$I > 2\sigma(I)$]	$R1$ = 0.029, wR_2 = 0.062	$R1$ = 0.031, wR_2 = 0.080	$R1$ = 0.015, wR_2 = 0.038	$R1$ = 0.060, wR_2 = 0.105
Final R indices (all data)	$R1$ = 0.040, wR_2 = 0.090	$R1$ = 0.031, wR_2 = 0.081	$R1$ = 0.016, wR_2 = 0.039	$R1$ = 0.066, wR_2 = 0.106
GOOF on F^2	1.466	1.103	1.134	1.367
Largest diff. peak/hole [e.Å^{-3}]	0.93 and –2.79	1.39 and –2.52	1.00 and –0.55	1.34 and –2.57