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Supporting Information

Organometallic Chemistry of Ga^{+}: Switching On and Off the Electron Pair of Monovalent Gallium in the Coordination Sphere of Ruthenium.*

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Table S1. Details of the structure determinations of products 1-6

Crystal parameters.	**1**	**2**	**3**	**4**	**5**	**6**
Empirical formula	$C_{34}H_{30}Ga_3Ru$	$C_{117}H_{208}P_4Ga_4Ru_2$	$C_{76}H_{79}BF_{24}Ga_4Ru$	$C_{144}H_{136}B_2F_{50}Ga_8Ru_2$	$C_{147}H_{137}B_2F_{50.50}Ga_8Ru_2$	$C_{100}H_{118}BF_{26}Ga_3P_2Ru$
Molecular weight	748.81	2219.73	1839.15	3598.05	3644.59	2196.92
Temperature (K)	113(2)	113(2)	113(2)	100(2)	103(2)	113(2)
Wavelength Mo-K_α (Å)	0.71073	0.71073	0.71073	0.71073	0.71073	0.71073
Crystal size (mm)	0.25 × 0.2 × 0.15	0.25 x 0.15 x 0.10	0.25 × 0.2 × 0.15	0.30 × 0.20 × 0.15	0.20 × 0.10 × 0.10	0.40 × 0.20 × 0.10
Crystal system, space group	Tetragonal, I4/m	Monoclinic, P2(1)/c	Orthorhombic, Pbca	Monoclinic, P2(1)/c	Triclinic, P-1	Monoclinic, P2(1)/c
a (Å)	19.8445(6)	20.9566(18)	25.546(3)	15.3517(4)	14.1090(6)	22.929(5)
b (Å)	19.8445(6)	24.925(3)	21.2722(8)	18.2016(6)	14.7960(7)	17.448(3)
c (Å)	18.8042(7)	23.0088(19)	29.176(2)	27.2028(10)	36.0416(18)	25.47(3)
α(°)	90	90	90	90	86.712(4)	90
β (°)	90	92.018(7)	90	102.118(3)	80.878(4)	101.84(4)
γ (°)	90	90	90	90	88.267(4)	90
Cell volume (Å^3)	7405.2(4)	12011.1(19)	15855(2)	7431.8(4)	7414.8(6)	9972(10)
Z	8	4	8	2	2	4
Density $\rho_{calc.}$ (g cm^{-3})	1.343	1.228	1.541	1.608	1.632	1.463
Absorption coefficient μ (mm^{-1})	2.577	1.225	1.625	1.733	1.739	1.076
F (000)	2968	4728	7392	3592	3639	4496
θ range for data collection (°)	2.54 - 27.58	2.68 - 27.70	2.67 - 27.59	2.81 - 27.66	2.74 - 25.05	2.69 - 27.62
Index ranges	-25≤*h*≤25, -22≤*k*≤25, -24≤*l*≤24	-27≤*h*≤23, -32≤ *k* ≤32, -29≤*l*≤29	-33≤*h*≤32, -27≤*k*≤27, -38≤*l*≤37	-20≤*h*≤20, -23≤*k*≤23, -35≤*l*≤35	-16≤*h*≤11, -17≤*k*≤16, -42≤*l*≤42	-18≤*h*≤29, -22≤ *k* ≤22, -33≤*l*≤33
Reflexions collected	37838	95267	290868	74060	30540	90864
Reflexions unique	4402 [R(int) = 0.0438]	27422 [R(int) = 0.1130]	18306 [R(int) = 0.1514]	17247 [R(int) = 0.0435]	24536 [R(int) = 0.1137]	22956 [R(int) = 0.0823]
Refinement method	Full-matrix least-squares on F^2	Full-matrix least-squares on F^2	Full-matrix least-squares on F^2	Full-matrix least-squares on F^2	Full-matrix least-squares on F^2	Full-matrix least-squares on F^2
Data/Restraints/Parameters	4402/0/200	27422/0/1160	18306/0/955	17247/0/988	24536/0/1896	22956/0/1198
Absorption correction	Empirical	Empirical	Empirical	Empirical	Empirical	Empirical
Goodness-of-fit on F^2 (*GOF*)	0.983	0.659	0.824	1.309	0.861	0.806
Final *R* indices [$I>2\sigma(I)$]	R_1 = 0.0334, wR_2 = 0.0936	R_1 = 0.0446, wR_2 = 0.0729	R_1 = 0.0483, wR_2 = 0.0927	R_1 = 0.0449, wR_2 = 0.1069	R_1 = 0.0701, wR_2 = 0.1403	R_1 = 0.0410, wR_2 = 0.0838
R indices (all data)	R_1 = 0.0505, wR_2 = 0.0980	R_1 = 0.1516, wR_2 = 0.0828	R_1 = 0.1247, wR_2 = 0.1050	R_1 = 0.0849, wR_2 = 0.1197	R_1 = 0.1494, wR_2 = 0.1548	R_1 = 0.1074, wR_2 = 0.0927
Largest difference peak and hole (e Å^{-3})	1.710 and -0.459	0.933 and -0.734	0.959 and -0.541	1.345 and -0.667	0.968 and -0.975	1.434 and -1.157

$R_1 = \Sigma(||F_{obs}| - |F_{cal}||) / \Sigma|F_{obs}|^{1/2}$ $wR_2 = [\Sigma_w(F_{obs}^2 - F_{cal}^2)^2 / \Sigma_w(F_{obs}^2)^2]^{1/2}$ $GOF = [\Sigma_w(F_{obs}^2 - F_{cal}^2)^2 / (N_{obs} - N_{par})]^{1/2}$