Electronic Supplementary Information of :

Deactivation Processes of Homogeneous Pd Catalysts using *in situ* Time Resolved Spectroscopic Techniques

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Table 1: EXAFS analysis results of (Xantphos)Pd(C_5H_9)OTf in acetone (room temperature).[a]

Abs-Sc[b]	N	R (Å)	σ^2 (Å^{-2})	E_0 (eV)
Pd-P	2.2	2.32	0.008	3.7
Pd-C	3.0	2.22	0.015	13.3
Pd-C	2.2	3.03	0.027	-2.1
Pd-C	3.3	3.67	0.036	-7.8

[a] Fit: R-space, $3.13 < k < 12.3$, $1.0 < R < 4.0$; k^0-weighted V.I.[b]=0.07, V.A.[b]=0.04, k^3-weighted V.I.=0.25, V.A.=0.14. [b] Abbreviations: Abs = Absorber, Sc = Scatterer, V.I. = Variance in Imaginary Part, V.A. = Variance in Absolute Part.

Table 2: EXAFS analysis results of (Xantphos)Pd(C_5H_9)OTf in acetone, reaction with piperidine (room temperature).[a]

Abs-Sc[b]	N	R (Å)	σ^2 (Å^{-2})	E_0 (eV)
Pd-P	2.0	2.37	0.018	-9.9
Pd-C	3.1	2.05	0.005	9.6
Pd-C	1.9	3.13	0.002	-3.9
Pd-Pd	1.0	2.70	0.221	-6.9

[a] Fit: R-space, $3.2 < k < 12$, $1.2 < R < 3.5$; k^0-weighted V.I.[b]=0.06, V.A.[b]=0.02, k^3-weighted V.I.=0.40, V.A.=0.21. [b] Abbreviations: Abs = Absorber, Sc = Scatterer, V.I. = Variance in Imaginary Part, V.A. = Variance in Absolute Part.

Figure 1: Fourier Transform of EXAFS data of (Xantphos)Pd(C_5H_9)OTf in acetone (dotted line) and of the reaction of (Xantphos)Pd(C_5H_9)OTf with piperidine after about 5 minutes (solid line).