Reactivity of the bridged-sulfide complex Pd$_2$Cl$_2$(μ-S)(μ-dmpm)$_2$ toward electrophiles; dmpm = bis(dimethylphosphino)methane

Craig B. Pamplin, Steven J. Rettig, Brian O. Patrick, and Brian R. James*

Department of Chemistry, University of British Columbia, Vancouver, British Columbia, Canada V6T 1Z1

Supplementary Material

**Figure S1.** ORTEP diagram of dmpm(S)$_2$ with 50% probability ellipsoids. Bond lengths (Å) and angles(°): S(1)–P(1)=1.9504(9), S(2)–P(2)=1.9523(9), P(1)–C(1)=1.822(2), P(1)–C(2)=1.798(3), P(1)–C(3)=1.789(3), P(2)–C(1)=1.817(2), P(2)–C(4)=1.796(3), P(2)–C(5)=1.800(3); S(1)–P(1)–C(1)=115.46(8), S(1)–P(1)–C(2)=111.84(10), S(1)–P(1)–C(3)=114.41(10), S(2)–P(2)–C(1)=115.75(9), S(2)–P(2)–C(4)=112.94(10), S(2)–P(2)–C(5)=113.64(9), C(2)–P(1)–C(3)=106.45(13), C(4)–P(2)–C(5)=105.56(12), P(1)–C(1)–P(2)=118.75(12).
**Figure S2.** $^{31}$P{$^1$H} NMR spectra (CDCl$_3$) of (a) dmpm(Se)$_2$ and (b) dmpm(S)(Se), both showing the $^2J_{PP}$ and $^1J_{PSe}$ coupling.
Figure S3. VT $^{31}$P{$^1$H} NMR spectra (MeNO$_2$-$d_3$) of [Pd$_2$Cl$_2$(μ-SMe)(dmpm)$_2$]OTf (5). The AA'BB' signal collapses at ~60 °C to give a broad singlet at higher temperature.