Supplementary Material (ESI) for Chemical Communications

General Method:

^{1}H (400 MHz) NMR spectra were recorded on a Varian Mercury spectrometer. All materials obtained from commercial suppliers and used without further purification.

General Kinetic Procedure:

2,6-dimethoxy-1,4-benzoquinone (2.6 equiv.) was measured into screw cap NMR tube which had been filled with argon. 0.30 mL of standard solution (0.086 M in toluene-d_8) of the amine was added by a gas-tight syringe through septum in cap of NMR tube. The sample was then placed into the NMR spectrometer pre-warmed to 100°C for ca. 5 minutes, and the 2,6-dimethoxy-1,4-benzoquinone was allowed to dissolve completely. The sample tube was ejected, and 0.45 ml of a standard solution ($4.85 \cdot 10^{-3}$ M in toluene-d_8) of **1** was added by a syringe. The tube was reinserted and timing begun. All kinetic runs were carried out to at least 2 half lives, and monitored by following the disappearance of the methyl resonance of the amine and the appearance of the methyl resonance of the imine. Signals were integrated over the region δ1.15-1.23 for the amine and δ1.84-1.92 for the imine and recorded in relation to a ferrocene internal standard. Determination of the observed rate was done by plotting the formation of the imine versus time and fitting the curve to a non-linear least squares fit. The first 10% of conversion was not taken into consideration in obtaining the rate as the catalyst precursor took a few minutes to completely dissociate, dependent on the temperature.