

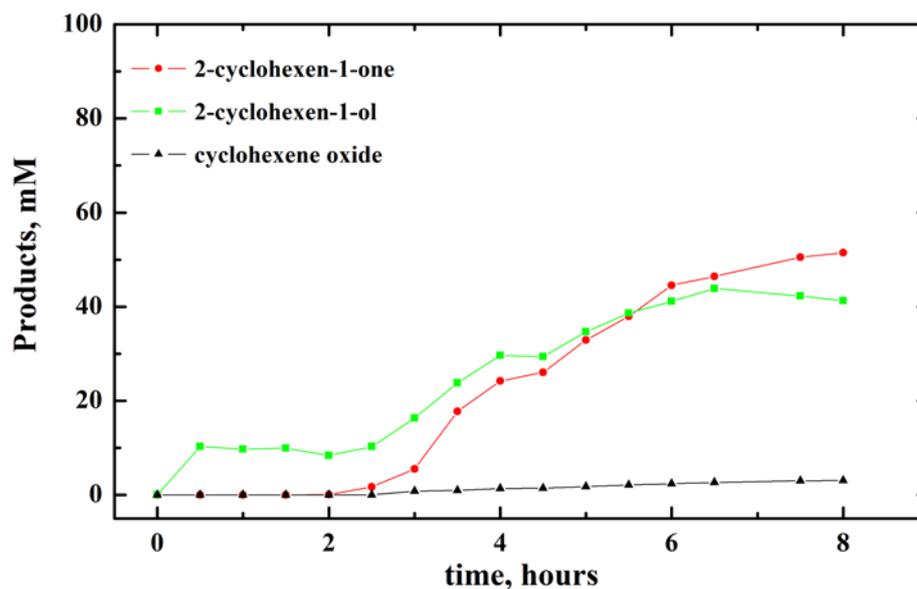
# *Supplementary Materials*

## **The [(Bn-tpen)FeII]2+ Complex as a Catalyst for the Oxidation of Cyclohexene and Limonene with Dioxygen**

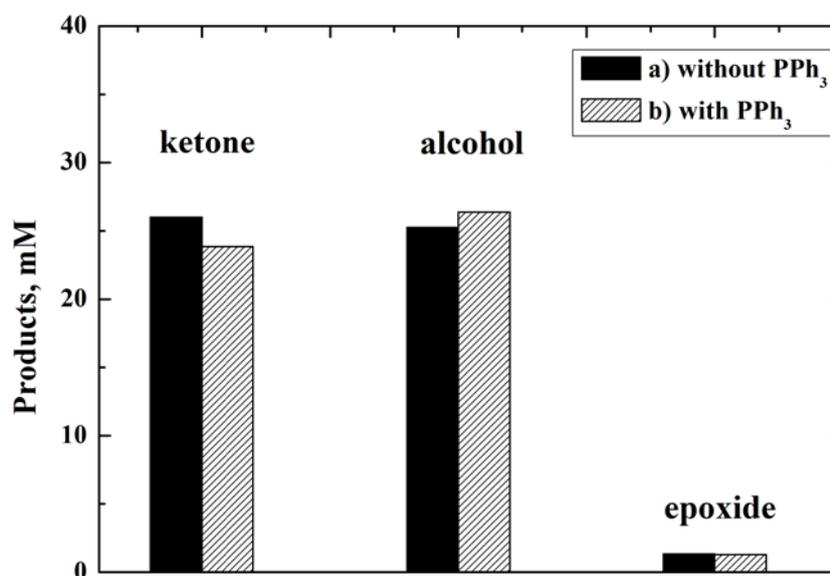
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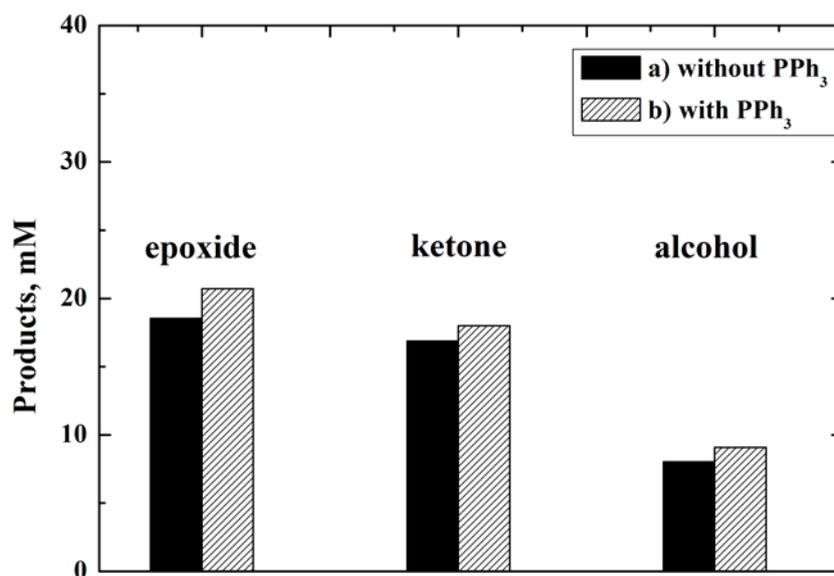
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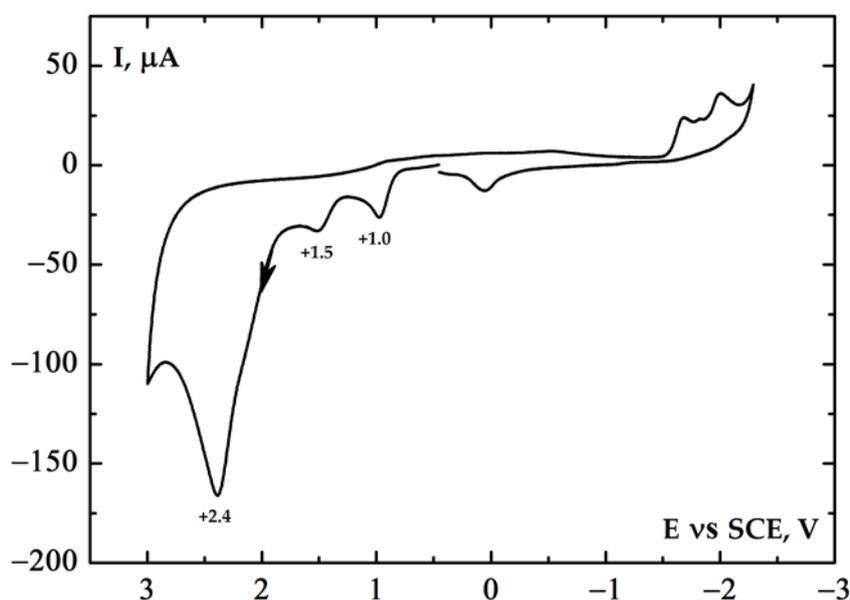
**Figure S1.** Product concentrations over time for the oxidation of 1 M cyclohexene by air ( $p_{O_2} = 0.2$  atm) in the presence of 10 mM cyclohexen-1-ol catalyzed by 1 mM synthesized  $[(\text{Bn-tpen})\text{Fe}^{\text{II}}]^{2+}$  in MeCN.



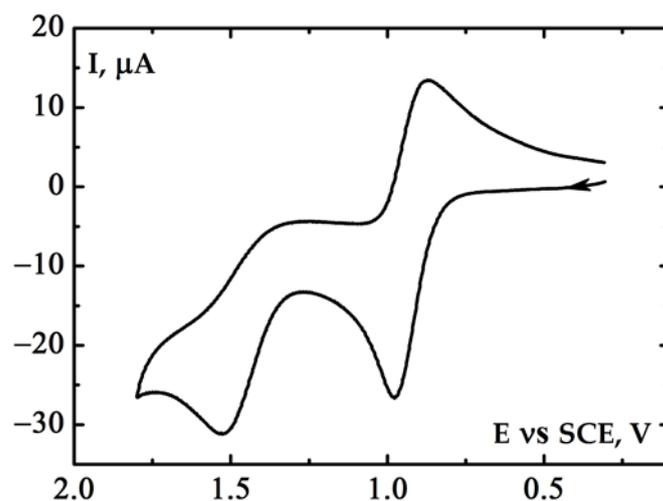
**Figure S2.** The amounts of products formed in the oxidation of 1 M cyclohexene with dioxygen ( $p_{O_2} = 1.0$  atm) catalyzed by 1 mM synthesized  $[(\text{Bn-tpen})\text{Fe}^{\text{II}}]^{2+}$  in MeCN after 3 h of reaction. Analysis of products was performed a) without triphenylphosphine, b) with 50 mM triphenylphosphine added to the sample before analysis.



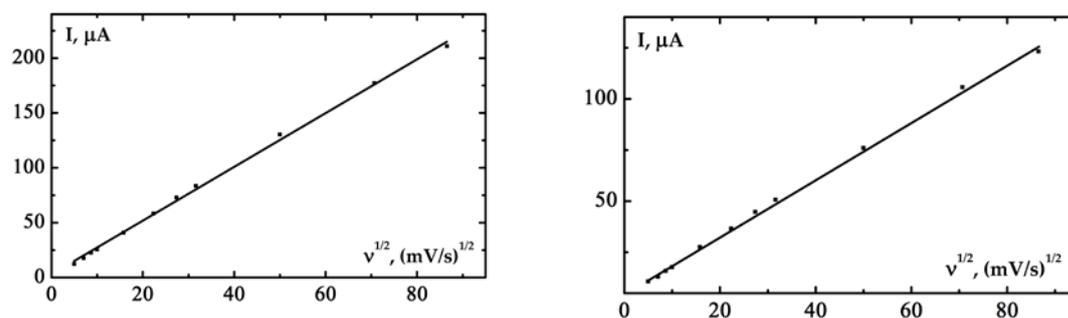
**Figure S3.** The amounts of products formed in the oxidation of 1 M limonene with dioxygen ( $p_{O_2} = 1.0$  atm) catalyzed by 1 mM synthesized  $[(Bn-tpen)Fe^{II}]^{2+}$  in MeCN after 3 h of reaction. Analysis of products was performed a) without triphenylphosphine, b) with 50 mM triphenylphosphine added to the sample before analysis.



**Figure S4.** Cyclic voltammogram of 5 mM synthesized  $[(Bn-tpen)Fe^{II}]^{2+}$  in MeCN containing 0.1 M  $(t-Bu)_4NClO_4$  as a supporting electrolyte. Scan rate, 0.1 V/s, GCE ( $0.008$  cm<sup>2</sup>), SCE vs. NHE +0.242 V, the anodic scan.



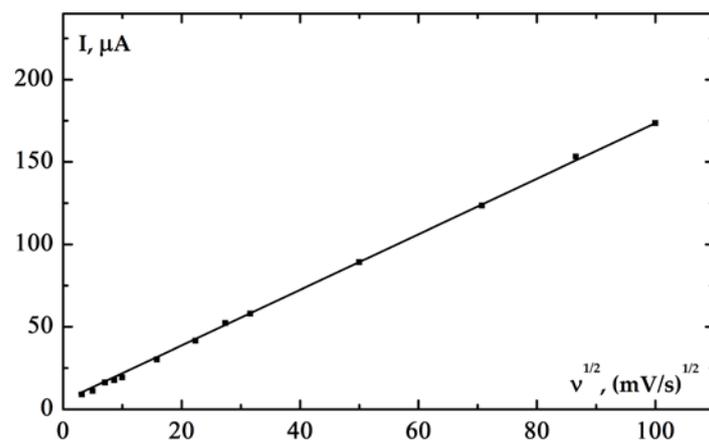
**Figure S5.** Cyclic voltammogram of 5 mM synthesized  $[(\text{Bn-tpen})\text{Fe}^{\text{II}}]^{2+}$  in MeCN with 0.1 M  $(t\text{-Bu})_4\text{NClO}_4$ . Scan rate, 0.1 V/s, GCE (0.008 cm<sup>2</sup>), SCE vs. NHE +0.242 V.



**(a)**

**(b)**

**Figure S6.** Dependence of  $I$  on  $v^{1/2}$  registered for 5 mM synthesized  $[(\text{Bn-tpen})\text{Fe}^{\text{II}}]^{2+}$  in MeCN [0.1 M  $(t\text{-Bu})_4\text{NClO}_4$ ] for anodic peaks at potentials **(a)** +1.0 V, **(b)** +1.5 V.



**Figure S7.** Dependence of  $I$  on  $v^{1/2}$  registered for the mixture of 5 mM synthesized  $[(\text{Bn-tpen})\text{Fe}^{\text{II}}]^{2+}$  and 10 mM PhIO in MeCN [0.1 M ( $t\text{-Bu}$ ) $_4\text{NClO}_4$ ], GCE (0.008 cm $^2$ ), SCE *vs.* NHE +0.242 V.