

SEKTIONEN FOR UORGANISK KEMI
KEMISK FORENING
Universitetsparken 5
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SUK-MØDE

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taler om

**Tuning the reactivity of non-heme iron catalysts for the oxidation of
alkanes**

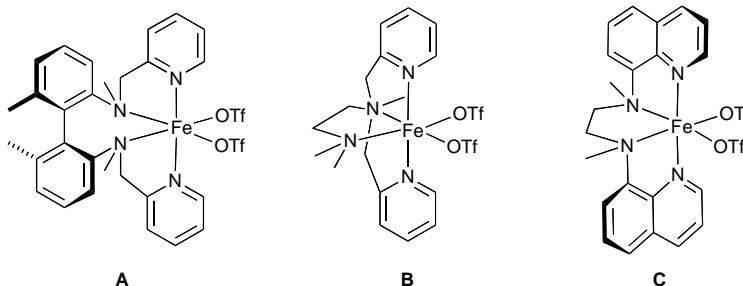
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TUNING THE REACTIVITY OF NON-HEME IRON CATALYSTS FOR THE OXIDATION OF ALKANES

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During the past decade, a number of non-heme iron(II) complexes have emerged as highly efficient catalysts for the oxidation of hydrocarbons.¹ We have prepared a series of non-heme iron(II) triflate complexes with a variety of nitrogen donor atom ligands. The catalytic activities of these complexes for the oxidation of cyclohexane, using hydrogen peroxide as the oxidant, have been carefully investigated. Mixtures of cyclohexanol and cyclohexanone are generally obtained and in some cases cyclohexyl hydroperoxide is also detected. Cyclohexyl hydroperoxide production is characteristic of systems in which radical pathways are dominant. This was observed with iron(II) triflate complexes containing tridentate bis(imino)pyridine ligands² and certain tetradentate ligands, for example **A**.⁴ Other complexes, such as **B** and **C**, have given reactivity patterns characteristic of high-valent iron-oxo complexes as the active intermediates, including high yields of oxygenates and a high selectivity for the production of alcohol relative to ketone.³ Structure-activity relationships will be presented and the importance of metal spin states will be discussed.



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2. Britovsek, G. J. P.; England, J.; Spitzmesser, S. K.; White, A. J. P.; Williams, D. J. *Dalton Trans.* **2005**, 945-955.
3. Britovsek, G. J. P.; England, J.; White, A. J. P. *Inorg. Chem.* **2005**, *44*, 8125-8134.
4. Britovsek, G. J. P.; England, J.; White, A. J. P. *Dalton Trans.* **2006**, 1399-1408.