

## Olefin reduction promoted by an ionically-tagged iron catalyst

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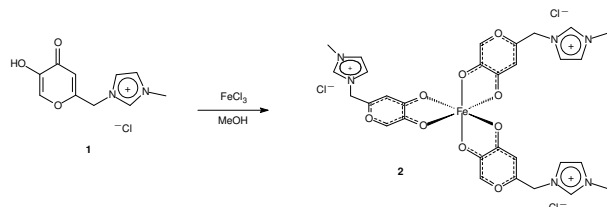
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### INTRODUCTION

The development of new, sustainable, efficient, selective and cheap catalysts is a fundamental goal in the modern chemistry. In this sense, the use of non-toxic and environmentally bearable metals such as iron may become a viable alternative to rare and expensive catalytic systems that use precious-metal such as palladium, rhodium, iridium and other metals.<sup>1</sup> Herein, it is presented the use of a novel ionically-tagged iron catalyst as the promoter of C=C reduction.

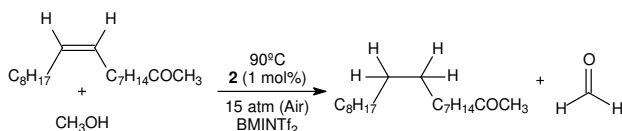
### RESULTS AND DISCUSSION

The novel iron complex was synthesized as described in Scheme 1.



**Scheme 1.** Synthesis of the ionically-tagged Fe-complex.

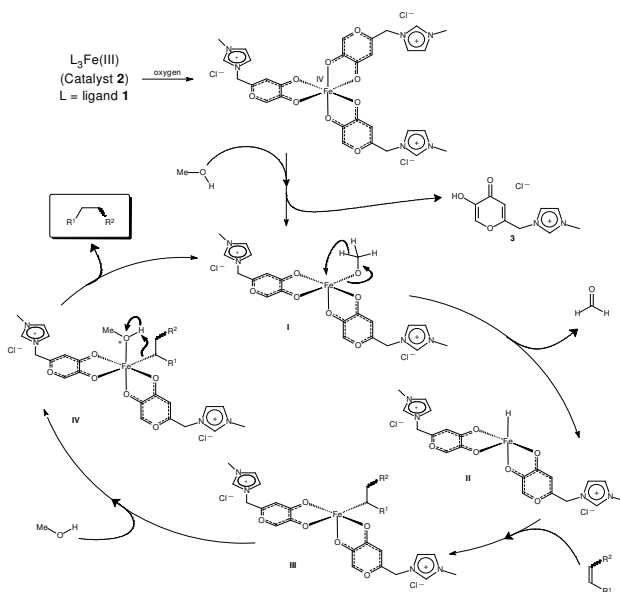
Using catalyst **2** supported in BMI-NTf<sub>2</sub>, we were able to perform the olefin reduction just by adding methanol into the reaction media, with 15 atm of synthetic air and 90 °C of temperature during a period of 24 h (Scheme 2).



**Scheme 2.** Olefin reduction by catalyst **2**.

Methyl oleate was reduced affording the desired product in 85%. Recycling reactions were performed and the activity of the ionically-tagged iron catalyst **2** remains unchanged even after 10 runs. Moreover, no catalyst leaching was noted by ICP-AES analysis.

Based in these and others obtained results, it is proposed the following catalytic cycle, as seen in Scheme 3.



**Scheme 3.** Catalytic cycle for new olefin reduction.

### CONCLUSION

A new catalytic method using an iron complex to reduce C=C double bonds was successfully developed and ten recycling reactions could be performed showing no loss of its activity. A plausible mechanistic cycle was proposed to explain the new reaction.

### ACKNOWLEDGEMENTS

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### REFERENCES

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