**Journal Club Assignment #1**

**Iron-Catalyzed Acylation-Oxygenation of Terminal Alkenes for the Synthesis of Dihydrofurans Bearing a Quaternary Carbon**

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1. Quickly read the abstract and using your textbook or any other resource define the following terms. Also provide a structure to serve as an example for each one. (*20 points*)

a.) Terminal alkene

b.) Acyl radical

c.) dihydrofuran

d.) alkene

e.) quaternary carbon

2. The oxidizing agent for the reaction discussed in this paper is di-*tert*-butyl peroxide. Draw the structure of this compound. What is the difference between a peroxide and an ether functional group? (*5 points*)

3. Consult Scheme 2. Draw the structure of the product and identify the new quaternary carbon formed in the reaction. (*5 points*)

4. Consult Scheme 3. What is the role of the iron (II) ion in this mechanism? Would the reaction work without it? (*10 points*)

5. The abbreviation Ph is used all over the place in the figures of this paper. What does this abbreviation stand for? Draw the structure. (*10 points*)

6. Scheme 3 (compound **E**) shows an example of a radical. What exactly is a radical? (*5 points*)

7. Consult Scheme 3. In several places a “fishhook” arrow is used as opposed to the double headed arrow we have used thus far. What is the difference between a “fishhook” arrow and double headed arrow? (*10 points*)

8. Consult Scheme 3. Using the curved arrows we discussed in class draw out each step of this reaction. This is not a trivial exercise and I will guide you as necessary. (*35 points*)