

CHEG 3128 – Chemical Engineering Junior Laboratory Spring 2017 – Battery 2 Prelab

In this lab, we are going to build from what we learned during the Battery 1 lab activities and experiences in Kinetics this semester in CHEG 3151 to look at the kinetic behavior of electrochemical devices. In this laboratory session, we will start to explore the factors that influence battery “performance” (i-V characteristics) through:

1. In class lecture and discussion; and
2. Demonstration of simple electrochemical cells

After this laboratory, you will be asked to not only recreate, but to extend the concepts from class and explain the behavior that you see. In order to be prepared for the lecture and discussion, there are a few things that you should do before arriving in class.

1. Review your notes and Prof. Mustain’s posted lecture notes for Battery Lecture 1
2. Review elementary reaction kinetics for $A \rightarrow B$ in a “normal” chemical reactor from CHEG 3151
3. Read Sections 1.3.2, 1.3.3, 3.1.1, 3.1.2, 3.3.1, 3.3.2 in “Electrochemical Methods: Fundamentals and Applications”, 2nd Edition (only around 10 pages, but they are information dense so don’t rush through them!!)

An electronic version of “Electrochemical Methods: Fundamentals and Applications”, 2nd Edition, by Authors Allen Bard and Larry Faulkner has already been posted on Husky CT. This book is world famous and the most widely used electrochemical textbook in the world. Our posting it is not meant for broad distribution, only for the learning purposes of this class. As such, this book should not be reproduced or distributed outside of this class in any way for any purpose.

There will be a laboratory assignment posted to Husky CT that provides detail regarding the tasks that will need to be completed before the group’s assigned time for the third part of this lab (shown as Battery 3 in the Laboratory Schedule).

As with the Battery 1 lab, your group will need to procure all of the supplies on your own. Remember, groups are allowed to borrow or share “equipment”, but are not allowed to share consumables or other general supplies in order to reduce overlap between groups. We want you to be creative!!