

Instructions: Use whatever format you would like to work on this assignment, but include in the filename the number of this quiz (i.e., 04) and your last name.

Heterogeneous Kinetics

- 1) The article that you read in preparation for this discussion section (available here: <https://www.jstor.org/stable/2874901>) indicated evidence for the Marcus inverted region using a system consisting of a (i) metallic electrode with (ii) redox-active molecules bound to it, and (iii) studies that included analysis of the temperature dependence of interfacial electron transfer. Let's discuss that in the context of the data reported in the article.
- 2) Metals are typically excellent substrates for electrochemical studies. However, they are poor choices for *photoelectrochemical* studies because when they absorb light, their photogenerated mobile charge carrier electrons and holes are exceptionally short-lived. As such, what is a superior choice of electrically conductive substrate for *photoelectrochemical* analysis of whether interfacial electron-transfer reactions follow Marcus theory? How does this platform compare to a metal in terms of the excited-state lifetime of photogenerated electrons and holes, reorganization energy, and experimental complexity?