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## Electrocatalytic Valorization of Biomass Intermediates via 1st-Row Transition Metal Electrocatalysts

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## **DATA MANAGEMENT PLAN**

### **1. Products of the Research**

The data generated in the PI's group are composed of analytical and spectroscopic characterization and measurement of precursor solutions, solid-state catalysts, catalytic intermediates, and reaction products. The data are primarily numerical, including NMR spectra (proton and hetero-nuclear; one and two-dimensional), infra-red and UV-visible absorption spectra, fluorescence spectra, EPR spectra, X-ray diffraction patterns, gas chromatograms, LC-MS spectra, cyclic voltammograms, polarization curves, bulk electrolysis spectra, Tafel plots, electric impedance spectra, and theoretical calculation results. Collaborative studies produce X-ray absorption spectra, including extended X-ray absorption fine structure and X-ray absorption near edge structure, and Raman spectra.

### **2. Data Format**

A detailed description of date, instrument setup, experimental design, procedure, observation, and results of each experiment conducted in the PI's group is recorded in hardcopy notebooks. Instrument-generated data, such as spectra, are stored in hard copies as printouts and/or instrument outputs, in addition to electronic versions such as ASCII codes, CSV files, MS Office documents, or other data-appropriate formats such as .dta for electrochemistry data. All data are indexed in the hardcopy notebooks as a part of the research narrative.

### **3. Access to Data and Data Sharing Practices and Policies**

Access to obtained/produced data are made available to the public through publications in scientific journals and poster/oral presentations in academic conferences/seminars. X-ray crystallographic structures accepted for publications are deposited in Cambridge Crystallographic Data Centre. It is typical that tabulated data (theoretical calculations), picture (.tif or .jpg) and crystallographic format files are included in the supplementary information of published materials. Data are not posted on website or made available to the public via a database prior to publication. It is not anticipated that data will be deposited in databases that mine the published literature (e.g. PubChem, NIST Chemistry WebBook). In general, unpublished data generated in the PI's group will be available to any interested party upon request if that data is not being held confidential for intellectual property reasons.

### **4. Policies for Re-Use, Re-Distribution and Production of Derivatives**

The PI does not post data (published or unpublished) on his group website or any other available venues for general access. Links to published work are made available on the group website, with no disclaimers or terms of use, as these are determined by the journal where the data are published.

### **5. Archiving of Data**

All data generated in the PI's group are stored for at least three years beyond the end of any funding period. To protect against water and fire damage, all hardcopy laboratory notebooks, spectrum printouts, and CD/DVD archives of electronic data are stored in a room on elevated steel shelves in a room with fire-stop doors, separated from any research laboratory. All hardcopy laboratory notebooks from previous researchers in the PI's group are permanently stored in his faculty office. A periodic full back-up of all electronic data are conducted and stored on an external hard-drive in a separate building or on an external server. Physical samples are stored in fireproof cabinets.