

Data Management Plan

Types of Data

The research described herein will lead to the discovery of new solid-state catalytic materials, which will be characterized by standard analytical techniques, including elemental analysis, electron microscopy, X-ray diffraction, Raman spectroscopy, Auger spectroscopy, X-ray photoelectron spectroscopy, electrochemistry and mass spectrometry. Catalytic reactions will be followed by electrochemistry, Raman spectroscopy and optical spectroscopy. All data will be stored in electronic format. Experimental details and other observations will be written in laboratory notebooks, following the standard practice in the field. These details will also be recorded and summarized electronically in word processing documents.

Data Standards

All data will be stored in an electronic format on laboratory computers using common computer file systems (ext4, NTFS, etc.). The electronic formats of the instrument outputs will conform to the standards used in the field, so that they are accessible and comprehensible to other researchers. Data will be stored in the native format associated with their means of acquisition (i.e., RAW files for image data). Whenever possible, spectroscopic and electrochemical data will also be saved as .txt files to facilitate file sharing and to avoid dealing with legacy or proprietary data formats. All of these data will be periodically copied onto archival electronic storage devices stored in a secure facility on campus outside the laboratory. More specifically, the data will be housed in a common data storage facility maintained by the IT Department of the College of Science and Mathematics (COSAM-IT) featuring over 60 TB of highly redundant (RAID level 6) storage space. This facility is located in a secure data center supported 24/7 by onsite technicians, uninterruptible power supplies, and twin diesel generators in the event of extended power supply disruptions. Automated systems continuously scan the stored data for changed or new files. Full backups to a secondary physical location are performed twice per month and incremental backups are performed daily. Additionally, snapshots are taken regularly to support file versioning to protect for unintentional data overwrites by the end user. COSAM-IT is responsible for backup schedules and system maintenance. COSAM-IT considers all data to be archival and permanent unless otherwise declared as disposable or time-limited; therefore, backups and archives of generated data will be maintained indefinitely.

Access

In general, it is the policy of the PI to not release data until after formal publication. The delay between data acquisition and release will be of sufficient length to protect the intellectual property of the PI and Auburn University, in accordance with the policies of the University Office of Technology Transfer. As is common practice, the data will be disseminated through seminars, colloquia, conference talks, posters, proceedings and publications in peer-reviewed journals. The data will be commonly presented in the forms of tables, figures, and graphs in the manuscripts and corresponding supporting information. The PI maintains a website through which the most notable (and non-proprietary) results will be presented. At the PI's discretion, data may also be released privately to interested parties. Data corresponding to work that has already been published or publically presented will be released immediately to any interested party. Under no instances will the PI collect fees for the public or private sharing of data.

Policies and Provisions for Re-Use and Re-Distribution

No permission restrictions other than journal copyright restrictions and IP considerations noted previously need to be placed on the data, which will be of interest to researchers in both academic and industrial settings.

Archiving and Preservation of Access

All laboratory workers will be instructed in the proper documentation and indexing of research efforts. Laboratory notebooks will be kept in the lab at all times in a writing area separate from the wet lab and above floor level to minimize physical damage to these documents. Portions of the notebooks may be copied or otherwise summarized in word processing files, stored and archived as described above.