<div align="center">**Template for the NSF Data Management Plan – Chemistry Division**</div>

Consult the solicitation and the guidance from the cognizant NSF <u>directorate</u> *before* **preparing your data management plan,** which NSF limits to two pages in length. Consider including information on the following points when writing your plan.

I. **Product of Research**

1. What data will be generated in the research? (Give a short description, including amount – if known, and the content of the data).

2. What data types will you be creating or capturing? (e.g. numerical data on chemical systems such as spectra, diffraction patterns, physical properties, time-dependent information on chemical and physical processes, theoretical formalisms, computational strategies, final or intermediate numerical results from theoretical calculations, software, and curriculum materials, etc.)

3. How will you capture or create the data? May include instrumentation, hardware or software used.

4. If you will be using existing data, state that fact and describe the sources. What is the relationship between the data you are collecting and the existing data?

II. **Data Format**

1. Which file formats (e.g., hardcopy notebook and/or instrument outputs, ASCII, html, jpeg or other formats) will you use for your data, and why?

2. What transformations (to more shareable formats) will be necessary to prepare for data sharing?

3. Which metadata standards will you use and why have you chosen them? (e.g. accepted domain-local standards, widespread usage).

4. What and who are the intended or foreseeable uses / users of the data?

III. **Access to Data and Data Sharing Practices and Policies**

1. How and when will you make the data available? (Resources needed: equipment, systems, expertise, etc.)

2. What is the process for gaining access to your data? Where will you provide general access to data (websites, public databases, or other databases)

3. Do you plan on publishing findings which rely on the data? If so, do your prospective publishers place any restrictions on other avenues of publication?

4. Explain details of any embargo periods for political/commercial/patent or publisher reasons.

5. How long will the original data collector/creator/principal investigator retain the right to use the data before opening it up to wider use?

6. Are there ethical and privacy issues? If so, how will these be resolved?

7. Who will hold the intellectual property rights to the data and how might this affect data access?

IV. **Policies and provisions for re-use, re-distribution, and the production of derivatives**

1. Will any restrictions need to be placed on the data regarding re-use or re-distribution? (e.g. licensing or contractual limitations)

2. Describe any disclaimers or conditions regarding the use of the data.

3. How will the dataset be licensed if rights exist? (e.g. any restrictions or delays on data sharing needed to protect intellectual property, copyright or patentable data.)

4. Are there any reasons not to share or re-use data? (Suggestions: ethical, non-disclosure, etc.)

V. Archiving of data

1. What is the long-term strategy for maintaining, curating and archiving the data?

2. What metadata/ documentation will be submitted alongside the data or created on deposit/ transformation in order to make the data reusable?

3. What related information will be deposited (e.g. references, reports, research papers, fonts, the original proposal, etc.)

4. What is the period of data retention? How long will/ should data be kept beyond the life of the project?
   Typical retention time for research data is three years after the final project close-out, with original data retained wherever possible. Some sponsors require a longer period of retention.

5. What procedures does your intended long-term data storage facility have in place for preservation and backup? May include frequency of back-up, location, and testing.

6. Are software or tools needed to access the data and will these be archived?

7. How will compliance with this plan be managed? Who will be responsible for data management in the research project?

8. For **non-digital data**: Where will hardcopy notebooks, instrument outputs, and physical samples be stored? (consider locations with safeguards against fire or water damage)