Neutron Scattering Appendix

CNMS proposal supplement | Anonymized illustrative guide based on Appendix N (source pages 9–11)

Purpose. When a CNMS proposal requests access to neutron scattering at the Spallation Neutron Source (SNS) or High Flux Isotope Reactor (HFIR), Appendix N collects additional beamline-specific scientific, scheduling, sample, and safety information. This guide follows the original appendix sequence and replaces identifying and project-specific information with generic prompts.

1 General information

CNMS proposal number	[Assigned CNMS proposal number]
IPTS proposal number	[If available; otherwise leave blank]
Proposal title	Example Research Proposal: Characterization of Advanced Materials
Principal investigator	[Researcher name / institution]
Requested facilities / instruments	[Specify SNS or HFIR and the requested beamline(s) / instrument(s); identify the technique used on each.]

2 Scientific justification

Clearly identify the scientific question(s) that will be addressed using the requested neutron beam time and selected techniques. Provide a justification for why neutrons are required to answer these questions, as opposed to other available characterization methods. (This rationale should also be incorporated into Question 1 of the Research section.)

3 Experiment plan — guidelines and tips

Describe the measurements. Identify what will be measured on each requested beamline and connect every measurement to a specific scientific objective. Explain the expected neutron-scattering signal or structural information and how it will test the proposed hypothesis.

Define the sample matrix. List the material types, compositions, treatments, controls, and number of samples. State which samples will be measured on which instrument and identify any replicates or comparison conditions.

Specify experimental conditions. Describe sample form and mounting, sample containers or holders, temperature, pressure, magnetic field, atmosphere, isotopic contrast or other environments, as applicable. Indicate any special equipment or preparation required.

Justify the beamtime request. Estimate time per sample, including loading, alignment, background measurements, changes in conditions, and repeats. Show how these estimates support the total number of days requested.

Explain data analysis and outcomes. State the principal quantities to be extracted, the planned reduction or modeling approach, and how the results will complement CNMS characterization. Describe the expected deliverables or decision points.

Prioritize contingencies. Identify the highest-priority samples and measurements if time is limited. Note foreseeable technical challenges and how the experiment will be adjusted.

4 Beamtime and scheduling

Number of days requested	[Justified number of neutron beam days]
Unavailable dates	[Dates or “None”]
Student thesis requirement	[Yes / No; explain if yes]

5 General environmental, safety, and health considerations

List all hazards and handling requirements for each sample and sample environment, including powders, chemicals, biological materials, pressurized gases, cryogens, or special containment. Do not assume “no hazards” from this illustrative guide.

6 Sample environment

Temperature range	[Minimum and maximum in K, if applicable]
Magnetic field	[Field in T, if applicable]
Pressure	[Ambient or operating range]
Other sample conditions	[Humidity, atmosphere, illumination, flow, etc.]
Sample cells / holders / gas exchange	[Geometry, materials, containment, preparation, loading and exchange procedure]
Equipment brought by users	[List or “None”]
Home-facility technical contact	[Name, email, phone, if external equipment is proposed]

7 Sample information — repeat for each distinct sample type

Sample name	[Descriptive sample identifier]
Molecular formula / composition	[Actual formula or mixture composition]
Sample description	[Physical and chemical description]
Sample hazards	[Hazards, SDS references, containment and disposal requirements]
Physical form	[Powder / liquid / solid / other]
Dimensions	[Height × width × length in cm, if applicable]
Number of samples	[Actual count]
Mass per sample	[Actual mass and units]
Density	[g/cm^3, if known or required]

Before submission

Confirm that the selected beamlines, sample environment, requested beamtime, and sample inventory are consistent throughout the appendix. Discuss instrument feasibility and any specialized equipment with the appropriate neutron-scattering staff.

Publication note: This is a generalized guidance example, not a completed beamtime request. Applicants must supply their own accurate technical and safety information.