**3) Research plan**

Please make sure your file for submission satisfying followings:

(1) The number of pages for “Research plan” should be up to 4 in A4 size. (2) Use 12pt font. (3) The file size should not exceed 3MB. (4) Convert the file to PDF. (5) Remove security settings or password. (6) Do not delete instructions/examples.

**i) Background of your research project for the proposed experiment (not required in the case of the proprietary use)**

[1] While referring to previous studies related to your research project, please describe a research trend (hot topics etc.) in the research field and a place of your research project. Please also describe the present status and unsolved problems of your research project.

[2] Please give a clear statement to justify why your research project should be performed in the context of the following review criteria: scientific or industrial significance as well as its social or educational merits.

[1] Research trend and a place, present status and unsolved problems of your research project

[2] Scientific or industrial significance as well as its social or educational merits

**ii) Purpose(s) of this proposed experiment**

[1] Please give a specific goal(s) of this experiment in your research project.

(While referring to a data set(s) obtained by previous works and your preliminary experiments, please state clearly what you intend to clarify using a neutron/muon instrument in MLF. If this is one of series of experiments conducted in multiple proposal rounds, please state clearly a difference from the previous experiments at MLF.)

[2] Please state the justification for using the particular neutron/muon instrument of MLF clearly.

[3] Please indicate if you have applied for the long-term proposal. In addition, please indicate if you are applying for another beamline of MLF related to this proposal. If so, please clearly describe the difference.

[1] Specific goal(s) of this experiment

[2] Justification for using the particular instrument of MLF. Please indicate µ^+ or µ^- in the case of a muon instrument.

[3] Relation of other proposal(s) to this proposal

**iii) Experimental and data analysis methods**

[1] Please describe the details of your experimental method (e.g., measurement condition(s), number of measurements, space group(s) and lattice constant(s) of crystalline sample(s), etc.) to achieve the goals above.

[2] Please describe the way to analyze the data. (Include data analysis protocol. Please describe expected results of this experiment (e.g., change in a lattice parameter, excited energy, film’s thickness, element distribution, etc.) and also how these results would be useful to achieve your research goals.)

\* If you plan to perform an experiment with special technique such as isotope labeling, please describe how the experiment and data analysis are conducted in detail.

\* Please describe expected difficulties, if any, in conducting this experiment such as a difficulty in sample preparation, in setting up a sample environment, in data analysis, in having high resolution, in reducing background level, etc.)

[3] If you have consulted with MLF instrumental scientist about this proposal, please write their names.

[1] Details of experimental method

[2] Way to analyze the data

[3] Name of MLF instrumental scientist whom you consulted about this proposal

**iv) Beamtime request and justification**

Examples:

A: 1 (hour/sample/temperature) x 12 (samples) x 5 (temperatures) + 6 (hours, time for changing temperature) + 6 (hours, time for measuring background and changing a sample, etc.) = 72 hours

B: For time-slicing measurement, 3 (hour/sample/temperature) x 2 (samples) x 5 (temperatures) = 30 hours are required. After that, 0.5 (hour/sample/temperature) x 2 (samples) x 5 (temperatures) = 5 hours are required to confirm each final structure. Consequently, 36 hours are required including 1 hour for measuring background and changing a sample.