

JSPS Core-to-Core Program Achievement Report

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In this short-term internship, I worked under Prof. Masato KATAHIRA, Bioenergy Research Section, Department of Fundamental Energy Science, Graduate School of Energy Science, Kyoto University. The main activities have leaned both theory and experimental of expression/purification/characterization of enzymes of woody biomass. Main activities are included following:

On 9.01.2020 in the afternoon, I went to the institute of advance energy, Uji Campus, Kyoto Uni. On that day, I meet with Prof. Masato KATAHIRA then we talk about the research activities assay in his laboratory;

On 10.01.2020 review research paper of Advisor; to understanding, what the lab does? And what about the lab can do? leaning theory of the expression/purification/characterization of enzymes applied for utilization of woody biomass and reading the papers.

On 10.01. 2020 in the afternoon, preparing rice straw sample, purification by using Dimethylformamide;

On 14. 01.2020 in the morning, purification rice straw by using nacalai tesque;

On 14. 01.2020 afternoons, attending Laboratory's research progress report;

On 15.01.2020 in the morning, attending Laboratory's seminar "effect evaluation of carbohydrate binding module on the activity of lignin-carbohydrate complex degradation enzyme"

On 16.01.2020 reading papers;

On 17.01.2020 protein expression assay and leaning about expression and purification technologies;

On 20.01.2020 attending Laboratory's research progress report;

On 21.01.2020 preparing presentation entitled" research activities in FEN, NUoL and Laos snapshot";

On 22.01.2020 attending Laboratory's research progress report and presentation;

On 24.01.2020 attending Laboratory's research progress report;

On 27.01.2020 attending Laboratory's research progress report;

On 28.01.2020 preparing DNA, the consensus DNA sequence for the replication origin, observe nucleic acids and their properties inside a living cell with in-cell NMR,

On 29.01.2020 in the morning, attending Laboratory's seminar;

On 29.01.2020 in the afternoon, operation Nuclear Magnetic Resonance (NMR) spectroscopy for determining the content and purity of a sample molecular structure for both DNA and biomass lignin;

On 30.01.2020 DNA determine results from NMR assay, in the future, the result will adapt for the chemical area;

On 31.02. 2020 research discussion with Junior Assoc. Prof. Ryuichi ASHIDA, a biomass research project in Laos and visiting FEN, NUoL.

On 03.02.2020 attending Laboratory's seminar; "lytic polysaccharide monooxygenases facilitate cellulose nanofibrils production", "lytic polysaccharide monooxygenase mediated production of ultra-fine cellulose nanofibers from delignified softwood fibers"

On 04.02.2020 Beechwood lignin results from NMR assay;

On 05.02.2020 result from Fluorescence anisotropy assay; G4-DNA and G4-DNA complex;

On 06.02.2020 attending Laboratory's research progress report; "acetylate treatment for rice straw and measurement of dissolved rice straw in several solvents";

On 07.02.2020 analyze the result of biomass lignin from NMR assay.

Based on the above activities and short-term internship program, I gain a lot of new knowledge on biochemical laboratory equipment both concept concerned and lab-processed. I am sure that this internship will strengthen and accelerate the e-Asia project both Japan and Laos.

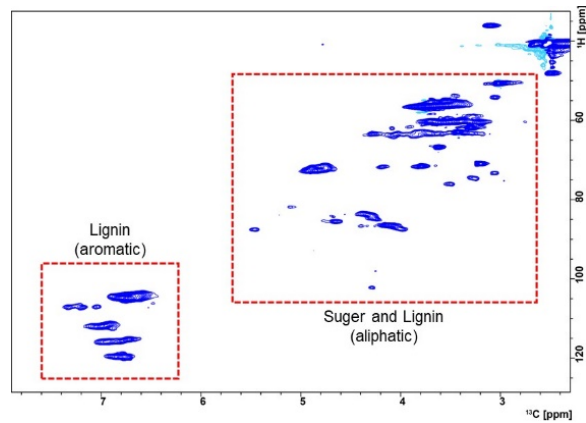


Figure 1 NMR result of Extracted biomass from beech wood



Figure 2 Extracted biomass from beech wood



Figure 3 NMR operation