Establishment of Process Flow Diagram for Extraction, Refining, and Chemical Conversion of Rubber Seed Oil – Overview of Subject 2 in SATREPS Program –

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The SATREPS program, which is being conducted jointly by Thailand and Japan, aims to develop the utilization technology of rubber seeds for green products to mitigate global warming and plastic pollution. Subject 2 primarily aims to extract crude oil from rubber seeds, refine it, and then convert it into various biochemicals. Furthermore, it also envisions extracting trace components from the leftover residue and converting it into fuel through pelletization. Participating organizations on the Thai side are Chulalongkorn University (CU), Kasetsart University (KU), and Walailak University (WU), while on the Japanese side are Tokyo University of Agriculture and Technology (TUAT) and Osaka Metropolitan University (OMU).

Crude oil recovery from rubber seeds is carried out in KU with a mechanical optimized oil pressing methods. Biomass pellets and biochar are also produced from outer shell and cake. Crude oil purification is conducted with both conventional technique and novel adsorption using modified active carbon produced from biochar (WU). CU has responsibility for compositional analyses of feed/product streams from each step in crude oil extraction and purification as well as the precise fermentation for production of fatty acid derivatives.

In TUAT, a process to convert the unsaturated fatty acid components abundant in rubber seed oil into dimer acids and branched saturated fatty acids is established. In OMU, a method for enhancing the stability of fatty acid esters derived from rubber seed oil is established and their potential applications in bioenergy is explored.

Biography (For Plenary, Keynote, and Invited Speakers)

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Personal History:
Dr. Kenji Ogino received his B.S. degree from Department of Reaction Chemistry, the University of Tokyo in 1986. His Ph.D. degree was given from the University of Tokyo in 1995. He started his carrier at Tokyo University of Agriculture and Technology as a research associate in 1986, and was appointed to current position in 2005. His research has concentrated on synthesis of semiconducting polymers In 1997, he spent one year at C. K. Ober research group in Cornell University as a visiting scientist. He was a president of the Society of Fiber Science and Technology, Japan from 2020-2023.

Research Keyword (3-5 keywords use commas to separate each word):
Block copolymer, Bio-based materials, Semiconducting materials, Photoconducting materials