Title : Identification of Microplastics from Municipal Wastewater Treatment Plants of Chiang Mai University

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Type of presentation* *(choose 1)* **:**

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ABSTRACT

Microplastics (MPs) are tiny plastic particles, typically less than 5 millimeters in diameter. MPs can originate from various sources including the breakdown of larger plastic debris, microbeads in personal care products, and synthetic fibers from clothing. Due to their small size, MPs can persist in the environment, contaminate ecosystems, and potentially enter organisms through food, water, and air. This study evaluates the efficiency of wastewater treatment systems in removing MPs by focusing on two wastewater treatment plants: the Chiang Mai University wastewater treatment plant and the Suan Dok wastewater treatment plant. Samples were collected from the influent and effluent of both plants to assess the effectiveness of microplastic removal via the treatment processes. Processes for MPs sampling and purification involve four steps: (1) sieving a water sample through 200, 100, 45, and 10-micron filters to separate MPs by size, (2) degrading the unwanted organic matter using a 30% hydrogen peroxide solution, (3) separating MPs from heavier debris using a 60% (w/w) NaI solution, and (4) dyeing MPs with methylene blue for enhanced visualization. The purified MPs will be analyzed using a microscope and

FT-IR spectrometer for identification and characterization. In this symposium, the efficiency of the sieve filtration process, methylene blue staining, and NaI density separation will be presented.