

## Development of magnetic flocculants for efficient microalgae harvesting in microalgae-based biorefinery

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Microalgal biofuel are considered as a promising energy source which is able to relieve concerns over the exhaustion of fossil fuels and global warming. Microalgae are largely composed of carbohydrates, proteins and lipids, which could be converted to biofuel such as methane, bioethanol and biodiesel. In addition, microalgae sequester carbon dioxide during photosynthesis and release hydrogen through biophotolysis. However, it is still required to develop high-efficiency and low-cost downstream processing technology in the biorefinery for the commercialization of microalgal biofuel. Most of all, microalgae harvesting is a bottleneck in microalgae-based biorefinery due to small size of microalgae and dilute concentrations in the culture, the cost of which accounts for about 20-30% in total cost of biodiesel production. Here, an advanced harvesting technology by using magnetic particles, focused on the synthesis of functionalized magnetic particles such as magnetite and barium ferrite, is introduced.