

พิมพ์ต้นฉบับบทคัดย่อวิทยานิพนธ์ภายในกรอบสี่เหลี่ยมนี้เพียงแผ่นเดียว

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KEY WORD: DYE WASTEWATER / COLOR REMOVAL / ANOXIC+ANAEROBIC/OXIC / SBR
JINTANA PANSUWAN : A COMPARATIVE STUDY OF THE PERFORMANCE OF
COLOR REMOVAL FROM BLEACH-DYE WASTEWATERS BETWEEN
CONVENTIONAL AND ANOXIC+ANAEROBIC/OXIC SBR PROCESS. THESIS
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The purpose of this study was to investigate the possibility and efficiency of the color and organic removals from the bleach-dye wastewaters by biological processes, namely, conventional AS-SBR and A₂/O-SBR. The experiment was done with 2 different wastewaters: a) three real dye wastewaters, i.e., the disperse dye wastewater which was taken from the equalizing tank at Factory I, the sulfur and reactive dye wastewaters which were taken from the vessel of the bleaching and dyeing process at Factory II, and b) the real reactive dye wastewater, with the addition of carbon source (sugar and acetic acid), tested by an A₂/O-SBR process which was run at the operation time of an anoxic+anaerobic condition of 8 and 20 hours, respectively.

The result indicated that the color and organic removal of the three dye wastewaters by the A₂/O-SBR system was higher than that of the AS-SBR system. The color removal by the A₂/O-SBR system for the disperse, sulfur and reactive dyes were 75, 15.7 and 31.2 per cent in SU unit and 11.2, 5.1 and 8.0 per cent in ADMI unit, respectively; whereas the efficiency was 73.6, 3.2 and 30.2 per cent in SU unit, and 3.8, 5.2 and 7.8 per cent in ADMI unit by the AS-SBR system for the same dye wastewater, respectively. It was found that the color removal for both systems by the ADMI unit was not significantly different while the visual observation showed higher results than that of the scientific measurement. Besides, the efficiency of COD removal was high, more than 75 per cent for the disperse dye, for both systems. TKN removal was high too: more than 93.7 per cent for the three dye wastewaters. But nitrogen and phosphorus removal by the A₂/O-SBR system was higher than that of the AS-SBR system (more than 50 per cent for three dye wastewaters). However, the A₂/O-SBR system had low nitrate and phosphorus removal because of the color interference in the nitrate analysis and the high temperature (24-27 °C) which reduced the efficiency of phosphorus removal.

It was also found that the color removal of the reactive dye wastewater, to which sugar and acetic acid were added, by the A₂/O-SBR system at the operation time of the anoxic+anaerobic and oxic conditions of 20+2 hours was higher than that of 8+2 hours, i.e., 42.8 and 19 per cent for 20+2 hours; 29.2 and 16.4 per cent for 8+2 hours in the SU and ADMI units, respectively.

It was concluded that the efficiency of color removal from the bleach-dye wastewater depended on the composition of the dye wastewater, type and structures of the dye molecules, the dye concentration and the optimum operation time at the anoxic+anaerobic and oxic conditions.

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