

Decolorization of azo dye (Orange II) in a sequential UASB-SBR system

Abstract

The combination of up-flow anaerobic sludge blanket (UASB) and sequencing batch reactor was chosen as an anaerobic and aerobic system, respectively, in the treatment of Orange II-containing wastewater. The Orange II and COD removal efficiencies were improved in the UASB system when the operating temperature and hydraulic retention time were increased up to 30 °C and 48 h, respectively. Nearly complete decolorization (>95%) was accomplished in UASB system when working at 0.3 g/l d of Orange II loading rate at 30 °C with hydraulic retention time of 24 h. The electron-scanning microscope (SEM) photographs showed that there were discrepancies in the microorganism composition of the two systems, which was probably the main reason for different treatment performance in COD and Orange II removals in both systems.

Keywords

Bio-face; Decolorization; Orange II; SEM; Sequencing batch reactor; Up-flow anaerobic sludge blanket