Title (6)	:	**Effect of Nitrogen-doped – Palm Oil Mill Effluent Sludge-biochar as Peroxydisulfate Activator on the Removal of Methylene Blue Dye as an Environmental-friendly Approach**
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Abstract	:	Introduction: Water pollution caused by dyes is a major problem as it is a toxic chemical that can cause chronic diseases when exposed to humans and aquatic habitats. Sulfate-based advanced oxidation process based on peroxydisulfate (PDS) has received a lot of attention recently for achieving color degradation in wastewater. Transition metal-based homogeneous/heterogeneous catalysts have shown to be a good alternative for the activation of persulfate. Nonetheless, this leads to significant secondary contamination due to metal leaching. Alternatively, nitrogen-doped biochar is a promising non-metal persulfate activator due to its lower cost and more environmentally friendly. Methods: Biochar from Palm Oil Mill Effluent (POME) sludge doped with nitrogen source of urea, ammonium chloride, and melamine was synthesized at a 700°C pyrolysis process and used to activate PDS. The nitrogen content of synthesized POME biochar was altered to ratios of 25:75, 50:50, and 75:25 respectively. Batch degradation experiments were then conducted to determine the feasibility of catalytic removal of methylene blue (MB) dye. Results: Based on experimental results, urea-doped biochar showed a greater MB removal compared to ammonium chloride and melamine-doped biochar. Besides that, higher nitrogen-to-biochar ratio increases the MB degradation significantly. A similar trend was demonstrated when a higher urea-doped biochar dosage was utilized. By utilizing 5.0 g of urea-doped biochar, a 100 ± 0.7% degradation of MB was achieved.