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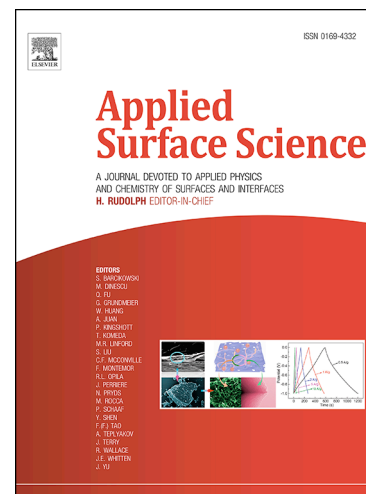
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# Conjugated Conducting Polymers (PANI) Decorated Bi<sub>12</sub>O<sub>17</sub>Cl<sub>2</sub> Photocatalyst with Extended Light Response range and enhanced photoactivity

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**Abstract:** In this work, PANI/Bi<sub>12</sub>O<sub>17</sub>Cl<sub>2</sub> composites have been successfully synthesized via a simple and green strategy at room temperature. From TEM, EDS-mapping and DRS results, it can be seen that conducting polymers PANI loaded well on the Bi<sub>12</sub>O<sub>17</sub>Cl<sub>2</sub>, and extended the light-absorption region of the composite to higher wavelength. The photocatalytic activity was evaluated by removal of CIP under visible light ( $\lambda > 420$  nm). The degradation rate of the optimal ratio composite is about 2 times to that of Bi<sub>12</sub>O<sub>17</sub>Cl<sub>2</sub>. The photodegradation intermediates of CIP were identified by mass spectrometry and the toxicity of the CIP photodegraded products was investigated via a microbiological antibacterial reaction. The results indicated the low-toxicity of the degraded products. Photocurrent results showed that the high separation and transfer of the photogenerated charge carriers were implemented by the introduction of PANI into the surface of Bi<sub>12</sub>O<sub>17</sub>Cl<sub>2</sub> material. Furthermore, long wavelength light ( $\lambda > 550$  nm) degradation of CIP indicated that the PANI played as photosensitizer could extend the light absorption region and thus enhance the photocatalytic ability. The reaction rate constant of optimal ratio PANI/Bi<sub>12</sub>O<sub>17</sub>Cl<sub>2</sub> composite was 3.1 times to Bi<sub>12</sub>O<sub>17</sub>Cl<sub>2</sub>. Eventually, a possible photocatalysis mechanism was proposed.

**Key Words:** PANI; Bi<sub>12</sub>O<sub>17</sub>Cl<sub>2</sub>; photocatalytic; toxicity; CIP;

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