CHAPTER 4

Conclusion and suggestions

4.1 Conclusion

Novel $FeVO_4/Bi_7O_9I_3$ nanocomposites with different weight percentages of $FeVO_4$ were reported. The $FeVO_4$ and $Bi_7O_9I_3$ contents played an important role in the photocatalytic performance of the nanocomposites. The 6.25%wt-$FeVO_4/Bi_7O_9I_3$ photocatalyst exhibited excellent photocatalytic efficiencies for the degradation of different organic compounds under visible light irradiation in comparison to the single $FeVO_4$ and $Bi_7O_9I_3$ photocatalysts. In addition, the 6.25%wt-$FeVO_4/Bi_7O_9I$ composite photocatalyst exhibited good stability after three times of usage, demonstrating the reusability property. Active species trapping experiments revealed that the $O_2^{\bullet-}$ and h^+ played an important role during the photocatalytic RhB degradation process. For the 6.25%wt-$FeVO_4/Bi_7O_9I_3$ photocatalyst, the Mott-Schottky plots revealed the p-type and n-type characters of $Bi_7O_9I_3$ and $FeVO_4$, respectively, suggesting the p-n junction formation of this composite. Evidenced by the experimental results, the enhanced photocatalytic activities of these photocatalyst were attributed to the improved visible light absorption, and the efficient separation and transportation of photogenerated charge carriers through the interfacial contact between $FeVO_4$ and $Bi_7O_9I_3$. Owing to notable enhancements in the photocatalytic properties of the $FeVO_4/Bi_7O_9I_3$ heterojunction, it is potentially applicable to the field of environmental remediation as well as solar water splitting.

4.2 Suggestions

4.2.1 Other electrochemical properties of $FeVO_4/Bi_7O_9I_3$ hybrid materials such as IPCE, APCE, or transient photocurrent density should be investigated for confirming the enhancement in charge separation and transportation.

4.2.2 Other photocatalytic activities such as H_2 and O_2 evolution, antibacterial, and inorganic pollutant mineralization of the synthesized composites should be explored.