

Accepted Manuscript

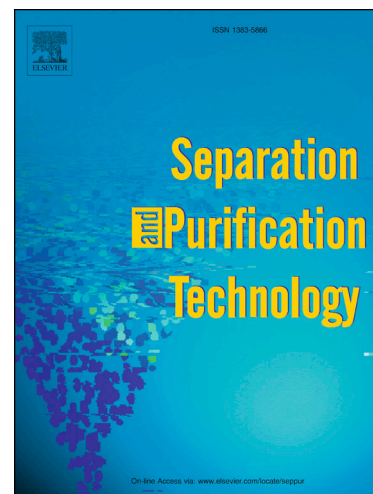
Utilization of LaCoO_3 as an efficient co-catalyst to boost the visible light photocatalytic performance of $\text{g-C}_3\text{N}_4$

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PII: S1383-5866(17)34240-5
DOI: <https://doi.org/10.1016/j.seppur.2018.03.016>
Reference: SEPPUR 14436

To appear in: *Separation and Purification Technology*

Received Date: 25 December 2017
Revised Date: 25 February 2018
Accepted Date: 12 March 2018



Please cite this article as: J. Luo, X. Zhou, X. Ning, L. Zhan, L. Ma, X. Xu, S. Li, S. Sun, Utilization of LaCoO_3 as an efficient co-catalyst to boost the visible light photocatalytic performance of $\text{g-C}_3\text{N}_4$, *Separation and Purification Technology* (2018), doi: <https://doi.org/10.1016/j.seppur.2018.03.016>

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Utilization of LaCoO₃ as an efficient co-catalyst to boost the visible light photocatalytic performance of g-C₃N₄

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Abstract: Exploiting highly efficient noble metal-free co-catalysts with promoted photocatalytic performance of the photocatalysts is of great importance. Herein, binary LaCoO₃/g-C₃N₄ hybrids consisting of LaCoO₃ co-catalysts in-situ growth on the surface of g-C₃N₄ nanosheets were constructed *via* a facile mixed-calcination process and utilized for the photocatalytic degradation of methyl orange (MO) in aqueous solution at room temperature under visible light irradiation ($\lambda > 420$ nm). As expected, all the LaCoO₃/g-C₃N₄ hybrids illustrated dramatically ameliorated photocatalytic efficiencies compared to the pristine g-C₃N₄. More importantly, the optimal photodegradation rate constant of LaCoO₃(3.0wt%)/g-C₃N₄ reached about 0.00348 min⁻¹, which was almost 3.2 times higher than that of pure g-C₃N₄ for MO degradation, which could be originate from the function of LaCoO₃ co-catalysts acted as excellent electron collectors for capturing the electrons generated by g-C₃N₄, effectively suppressed the photogenerated charge carriers recombination and prolonged the lifetime of the separated electron-hole pairs. Additionally, radical

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