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## **Effect of Calcination Temperatures on the Photocatalytic Activities of Commercial Titania Nanoparticles under Solar Simulator Irradiation**

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### **ABSTRACT**

In this study, the effect of calcination temperatures on the photocatalytic activity of commercial TiO<sub>2</sub> photocatalysts (Evonik P25, Evonik P90, Hombikat UV100, Hombikat N100) was evaluated for degradation and removal of 2,4-dichlorophenoxyacetic acid (2,4-D) herbicide under solar simulator irradiation. The calcined samples were prepared by heating commercial TiO<sub>2</sub> photocatalysts at 573 or 773 K for 4 hours. It was confirmed that before calcination treatment, the P25 TiO<sub>2</sub> showed similar activity to the P90 TiO<sub>2</sub>, which activity was higher than those of Hombikat UV100 and N100 TiO<sub>2</sub>. The activity of P25 and P90 was reduced when the photocatalysts were calcined at 573 K and 773 K. On the other hand, the Hombikat catalysts showed an improved activity with the increase of calcination temperatures.

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| Commercial TiO<sub>2</sub> nanoparticles | Calcination temperature | 2,4-Dichlorophenoxyacetic acid | Solar simulator |

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