

A. W. Morawski 教授 ご講演のご案内 I

光触媒のご研究で国際的にご活躍をされています Antoni W. Morawski 教授 (West Pomeranian University of Technology, Poland) を、学長外国人特別招へい研究者として本学にお招きし、講演をしていただくことになりました。ご興味のある皆様には、ぜひご聴講にお越し頂きたく、ご案内いたします。

日時： 2015年2月18日(水) 16:00~17:00

場所： 東京理科大学・葛飾キャンパス研究棟9階・基礎工学セミナー室1

Development of UV-Vis and Vis TiO₂ photocatalysts by modification with nitrogen, carbon and metals

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Recently, titanium dioxide is commonly used in the photocatalytic water treatment and air purification for decomposition and oxidation of different pollutants. A lot of modification procedures of pristine material by metal or non-metal species were proposed to obtain the TiO₂ photocatalysts with high photoactivity under both UV-Vis and Vis radiation.

The large scale laboratory installation of 0.5 kg capacity for preparation of a base TiO₂ photocatalyst was developed by Institute of Chemical and Environment Engineering. Commercial titanium dioxide manufactured by Grupa Azoty Chemical Plant Police S.A. (Police, Poland) was used as a starting material for the photocatalyst preparation. This base photocatalyst was further modified using various modifying agents, including carbon, nitrogen, carbon and nitrogen, metal (Fe, Co, Ni) or graphene.

The photocatalytic activity of the prepared modified TiO₂ was evaluated through the degradation of model organic compounds in water under UV-Vis and Vis light as well as air purification and antibacterial testing. Both acetaldehyde and acetic acid were mineralized by the modified TiO₂. Also, NO_x removal from air was confirmed. In the case of water purification the removal of dyes and phenol were performed.

Finally, the ability for adsorption of SO₃ and CO₂ on a modified base TiO₂ has been demonstrated. Moreover, modification of TiO₂ by graphene was found to be very promising.

問い合わせ先：材料工学科 安盛敦雄（内線 1820）