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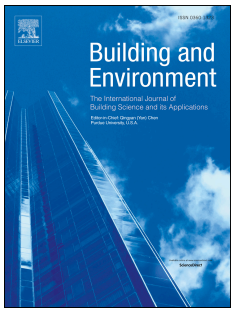

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ACCEPTED MANUSCRIPT

A type of novel glass for indoor air cleaning under visible-light

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Since the pollution of indoor air has significant effects on health, it is meaningful if decorative glass inside can purify indoor air. Types of glass were prepared by coating them with modified nano titanium dioxides (nano-TiO_2) and N, F and Fe ions were used as modification agents. Orthogonal experimental method was adopted in the preparation. Finally, a type of novel glass able to purify indoor air was found. The air cleaning performance of the glass was evaluated by the degradation of benzene in air. Optimal preparation conditions for the glass were determined. High initial benzene concentration and velocity had positive effect on the degradation efficiency. The enhanced photocatalytic activity was attributed to the nano crystallite size, element doping and proper preparation temperature. Additionally, the glass with optimized doping element was found to display a good self-cleaning ability, which was estimated by comparing the contact angle of water dropped on the glass surface. The glass also showed high durability and transmittance, which met the requirements of practical utilization.

Key words: Glass, Indoor air cleaning, Modified titanium dioxides, Orthogonal experimental method

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