

Advanced Visible-light Self-cleaning Textiles.

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A facile process to prepare spherically uniform Au/TiO₂/SiO₂ nanocrystallites was presented. The nanocrystallites synthesized were characterized by FESEM, HRTEM, XRD, UV-Blocking, and visible light self-cleaning properties. Ultraviolet Protection Factor of the sample results before and after 30 times wash fastness test have revealed that the treated samples are rateable according to the Australian/New Zealand Standard AS/NZS 4399: 1996. The visible light self-cleaning properties were achieved after 20 h simulated visible light irradiation. The Au/TiO₂/SiO₂ nanocomposites have shown better visible light self-cleaning performance than that of TiO₂ treated only and represent a significant step forward in visible-light-driven self-cleaning treatment for textile materials with a high potential for commercialization.