

Nanocomposites and nanomaterials

TiO₂ and its composites as effective photocatalyst for glucose degradation processes

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Repeatedly expressed the hypothesis that immobilization of titanium dioxide on the surface of activated carbon allows obtaining the composite material which demonstrates increased efficiency in contaminants removal. That be expected thank to combination of photocatalytic properties of TiO₂ with adsorption properties of activated carbon [1-3]. Low-temperature hydrolysis method was applied in order to produce highly effective composite material. Synthesized samples were further investigated in the process of photocatalytic glucose degradation from 1 % solution. Synthesized composites TiO₂ with activated carbon (AC-TiO₂) exhibit significantly higher activity (up to 20-50 %) in comparison with samples of pure TiO₂ synthesized the same way, and industrial photocatalyst AEROXIDE® TiO₂ P25 produced by EVONIK Industries (Fig. 1).

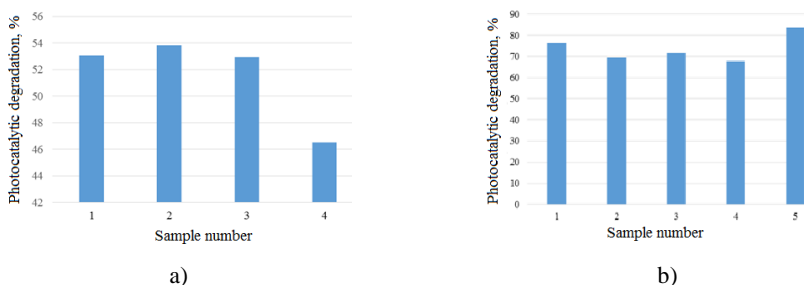


Fig 1. Photocatalytic degradation of glucose with pure TiO₂ (a) and AC-TiO₂ composites (b) synthesized from Ti₂(SO₄)₃ precursor.

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