

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

On the mechanism of enhanced photocatalytic activity of composite TiO₂/carbon nanofilms¹ DINKO CHAKAROV, RAJA SELLAPPAN, Department of Applied Physics, Chalmers University of Technology — We fabricated and analyzed well-defined model samples consisting of anatase and graphitic carbon films with and without modifying the interface between them by a thin SiO₂ space layer. The study was performed in the search for the origin of the enhanced photocatalytic activity of composite TiO₂–carbon systems observed previously by us, but also reported in number of publications. We found that the films with a TiO₂/C interface show noticeably lower photoluminescence intensity and shorter carrier life times compared to single TiO₂ films with the same thickness and composition. The stronger non-radiative recombination was mainly assigned to charge carrier leakage (transfer) at the interface between TiO₂ nanocrystallites and the carbon film.

¹The study is performed with financial support from N-INNER, project Solar Hydrogen (P30938-1).

Dinko Chakarov
Department of Applied Physics, Chalmers University of Technology

Date submitted: 25 Oct 2011

Electronic form version 1.4