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Edurne González, Audrey Bonnefond, Mariano Barrado, Aurora M. Casado Barrasa, Jose M. Asua, Jose R. Leiza

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*Edurne González [a], Audrey Bonnefond [a], Mariano Barrado [b], Aurora M. Casado Barrasa [c], Jose M. Asua [a], Jose R. Leiza [a]**

a. POLYMAT, University of the Basque Country UPV/EHU, Kimika Aplikatua saila, Kimika Zientzien Fakultatea, Joxe Mari Korta zentroa, Tolosa Hiribidea 72, 20018 Donostia-San Sebastián, Spain. (jrleiza@ehu.es)

b. SGIKER, University of the Basque Country UPV/EHU, Joxe Mari Korta zentroa, Tolosa Hiribidea 72, 20018 Donostia-San Sebastián, Spain

c. Acciona Infrastructures Technology Centre, Spain

ABSTRACT

Titanium dioxide Pickering stabilized methyl methacrylate/n-butyl acrylate (MMA/BA) copolymer latexes were synthesized by miniemulsion polymerization. The particle size of the hybrid latexes was controlled by the concentration of TiO_2 used as stabilizer; the larger the concentration the smaller the particle size. The hybrid latexes formed coherent films with honey comb structures, the opacity of the films increased with the amount of TiO_2. The photocatalytic activity of the hybrid films was assessed by coating concrete specimens and analyzing the capabilities to degrade Rhodamine B under UV-light exposure. The films showed excellent self-cleaning activity and it was found that the photocatalytic activity index was little affected by the concentration of TiO_2 and the roughness of the film. The kinetic of the photocatalytic reaction was controlled by the diffusion of the Rhodamine B from the inner of the film to the interface.