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With the continuous growth of industrialization, water pollution has become a serious environmental problem as industrial effluents containing organic and inorganic pollutants are constantly being discharged into the water stream. Although there are several water treatment technologies available, photocatalysis has been known to be one of the better options to mitigate this problem. The photocatalyst is usually applied in suspension mode in wastewater treatment. However, this method suffers from several drawbacks; (i) agglomeration of the photocatalyst leads to a decrease in photocatalytic activity and (ii) the recovery process is difficult and costly due to the post-treatment filtration step. These problems could be overcome by immobilizing the catalyst particles on a support or thin film and at the same time, improving the recyclability of the thin film based photocatalysts. The use of polymer/metal oxide mixed matrix membranes as portable photocatalysts for wastewater treatment indeed has great potential. Therefore we intend to explore the possibilities of immobilizing TiO_2 and ZnO on polyethersulfone (PES) as thin film photocatalysts via a phase inversion technique. The effect of metal oxide loading on the physicochemical properties and the photocatalytic performance of the PES/metal oxide thin film photocatalysts in the photodegradation of dyes will be investigated.