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Development of an Optical-fibre Sensor Using a Functional Membrane*

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A new functional membrane which changes its reflectance spectra according to the pH of the test solution is described. A chloromethylstyrene (CMS)/methylmethacrylate (MMA) copolymer was chosen as the base for the immobilized reagent. A basic ion-exchanger was then added the CMS/MMA copolymer. Bromothymol Blue (BTB) was then immobilized on the copolymer. A functional membrane could then be fabricated in various shapes since chemical modification of CMS/MMA copolymer could be performed before casting. The fabricated pH sensitive functional membrane showed a maximum reflectance change at the wavelength of 540 nm for pH changes from 4.0 to 9.0. Dissolution of BTB from the CMS/MMA copolymer was minimal so that good reproducibility of the reflectance change was obtained.

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