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Title: A fluorescent colorimetric pH sensor and the influences of matrices on sensing performances

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A fluorescent colorimetric pH sensor and the influences of matrices on sensing performances

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Abstract

A fluorescent colorimetric pH sensor was developed by a polymerization of a monomeric fluorescein based green emitter (**SM1**) with a monomeric 2-dicyanomethylene-3-cyano-4,5,5-trimethyl-2,5-dihydrofuran derived red emitter (**SM2**) in poly(2-hydroxyethyl methacrylate)-*co*-polyacrylamide (PHEMA-*co*-PAM) matrices. Polymerized **SM1** (**PSM1**) in the polymer matrices showed bright emissions at basic conditions and weak emissions at acidic conditions. Polymerized **SM2** (**PSM2**) in the polymer matrices exhibited a vastly different response when compared to **PSM1**. The emissions of **PSM2** are stronger under acidic conditions than those under basic conditions. When **SM1** and **SM2** were polymerized in the same polymer matrix, a dual emission sensor acting as a ratiometric pH sensor (**PSM1,2**) was successfully developed. Because the **PSM1** and **PSM2** exhibited different pH responses and separated emission

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