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1. Introduction.

The sol-gel technology has been becoming one of the most attractive methods in materials science and analytical chemistry. Unlike traditional silica glasses, sol-gel derived glasses have numerous of advantages: tunable pore size and surface chemistry (versatility), extended composition ranges, better homogeneity, less energy consumption – more greener, uses simple lab equipment (low cost) and can be used to immobilize less thermal unstable molecules and even biomolecules.

In most experiments tetraethoxysilane (TEOS) and organically modified silicates are used because of many attracting properties [1-3]. Because silicate based precursor are more tunable in contrast to d-block metal containing counterparts. Sol-gel based membranes was successfully utilized in multianalyte sensor and shown great advantageous [4]. Ammonia sensor was also proposed using bromocresol purple and fast response time of 10 s was achieved [5]. TEOS based sensors also used in not only preparation of optic sensors, but also electrochemical sensors [6].

In this paper we present results of immobilization a pH-sensitive indicator bromocresol purple in TEOS based sol-gel membrane. We also studied pH-response of final materials and proposed optimal preparation parameters. Prepared pH-sensitive membranes were studied using different physicochemical techniques and discussed.

2. **Experimental**.

2.1. Materials and methods.

Tetraethoxysilane (TEOS) was purchased from Haihang Industry Co.,Ltd (PRC); ethanol (EtOH), bromocresol purple (BCP), hydrochloric acid (HCl) and nitric acid (HNO_3) were analytical grade and used without any purification. All buffers and solutions prepared using chemical pure grade reactants and doubly distilled water used as solvent.

2.2. Preparation of sol-gel membranes.

Sol-gel solutions were prepared mixing 4 ml of TEOS, 4.1 ml of EtOH (2.88 ml of MtOH) for 15 minutes. 1.3 ml 0,01M HCl aqueous solution was added in order to start hydrolysis and condensation reactions. pH of the final solution was adjusted to 2 since this solution was found to be optimal. Resulting solution was mixed for 4 hours at room temperature. Then 40 μl of 0.1M BCP in EtOH solution was added and another 30 minutes was mixed. In order to study water to alkoxide ratio *R* several sol cocktails were prepared and the content is given in Tab. 1.