

Kemawadee Udomphan 2011: Preparation of Cadmium Sulfide Intercalation Compound in Bentonite to Measure Sulfide Ion in Aqueous Solution by Potentiometric Method. Master of Science (Chemistry), Major Field: Chemistry, Department of Chemistry. Thesis Advisor: Associate Professor Ladda Meesuk, Ph.D. 157 pages.

In this work, we prepared CdS in the interlayer space of calcium bentonite by an *in situ* solid-solid reaction between Cd(II)-bentonite and Na<sub>2</sub>S. The resulting CdS-intercalated bentonite was used to construct potentiometric electrode.

The electrode was constructed by mixing CdS-intercalated bentonite, artificial graphite, carboxymethyl cellulose (CMC) and polytetrafluoroethylene (PTFE) in a ratio 0.2:0.025:0.4:0.3 gram. It was found that the electrode was selective to sulfide ion, good straight line was related to log[S<sup>2-</sup>] give positive slope closed to theoretical value. The concentration of linear response range was around 10<sup>-1</sup> and 10<sup>-4</sup> M of S<sup>2-</sup>. Anions such as SO<sub>4</sub><sup>2-</sup>, F<sup>-</sup>, Cl<sup>-</sup>, NO<sub>3</sub><sup>-</sup> or cations such as Mn<sup>2+</sup>, Cu<sup>2+</sup>, Ni<sup>2+</sup>, Hg<sup>2+</sup> and Ag<sup>+</sup> were not interfere the S<sup>2-</sup> measurement. The electrode can be used to measure sulfide ion in natural water samples. The electrode stability was good, it was found that after about 5 months the sensitivity loss only 4.15% (slope changed from 29.62 to 30.85).

This is the first time that CdS-intercalated bentonite is used to construct potentiometric sensor to measure sulfide ion in solution.

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