The sol, which is frequently called Selmi's sol, may be purified by coagulating the particles with sodium chloride, centrifuging and discarding the supernatant solution, repolishing in water, and dialyzing to remove the excess sodium chloride.

The reversibility of the sol is said to be increased by carrying out the reaction around 0° in the presence of protecting colloids. A finely divided bluish sulfur results on allowing hydrogen sulfide and sulfur dioxide to react above the water in an aspirator bottle.

Sols of sulfur in benzol, toluol, xylol, kerosene, acetone, and ethyl acetate can be prepared by conducting sulfur dioxide and hydrogen sulfide simultaneously into the respective liquids. A benzol sol formed in this way and containing over 1.5% sulfur has a deep yellow color and is stable indefinitely. Neither electrolytes nor organic non-electrolytes which dissolve in benzol have an appreciable coagulating action. The cause of the marked stability should be investigated.

The sols in carbon bisulfide, benzol, and carbon tetrachloride are orange at first but turn yellow on standing and the sulfur settles out. If this precipitate is filtered and dried out of contact with air, it is repolished by shaking with water, glycerin, and fats.

**Action of Acids on Sodium Thiosulfate.**—Sulfur sols are conveniently formed by the action of hydrochloric acid (Engel) or sulfuric acid (Raffo) on sodium thiosulfate. Since sulfuric acid is most commonly employed the resulting sol is called Raffo's sol. The equations for a part of the reactions involved are as follows:

\[ 3\text{Na}_2\text{S}_2\text{O}_3 + 3\text{H}_2\text{SO}_4 \rightarrow 3\text{H}_2\text{S}_2\text{O}_3 + 3\text{Na}_2\text{SO}_4 \]  
\[ (1) \]
\[ \text{H}_2\text{S}_2\text{O}_3 \rightarrow \text{S} + \text{SO}_2 + \text{H}_2\text{O} \]  
\[ (2) \]
\[ 2\text{H}_2\text{S}_2\text{O}_3 + 2\text{H}_2\text{O} \rightarrow 2\text{H}_2\text{S} + 2\text{H}_2\text{SO}_4 \]  
\[ (3) \]
\[ \frac{2\text{H}_2\text{S} + \text{SO}_2 \rightarrow 3\text{S} + 2\text{H}_2\text{O}}{3\text{Na}_2\text{S}_2\text{O}_3 + \text{H}_2\text{SO}_4 \rightarrow 4\text{S} + 3\text{Na}_2\text{SO}_4 + \text{H}_2\text{O}} \]

To the extent that Equation (2) takes place, sulfur is formed by simple decomposition; but for the most part, it results from an oxida-

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10 Sarason: German Pat., 262,467 (1913).
11 Compt. rend., 119, 866 (1919).