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TITLE: The photocatalytic activity of cadmium sulfide

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TEXT: The effect of preparing and thermally pre-treating cadmium sulfide, the effect of admixtures (W, Ag, Cu) upon its activity as catalyst in the photosynthesis of hydrogen peroxyde, and the photoreduction of methylene blue by formaldehyde were studied in the Chernovitskiy gosudarstvennyy universitet (Chernovits State University). Also the photocatalytic activity of some zinc sulfide samples was investigated. The activity was determined by a previously described method and the photo-emf measured by the condenser method. A considerable effect of the preparation method upon the catalytic activity of CdS was observed. Highest activity showed CdS prepared from $CdCl_2$. Also the introduction of halogens increases the activity of CdS. The effect rises in the sequence J - Br - Cl. Preheating of CdS to 400 - 700°C in a thoroughly purified nitrogen atmosphere improves also the catalytic activity. The authors state that, contrary

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to the opinion of R. E. Stephens et al. (J. Phys. Chem., v. 59, 1955, 966) an increase in excess Cd, effected by heating or by the resulting loss of sulphur, causes a rise in the activity, since the Cd atoms play the role of active centers. Also admixtures of metals (W, Ag, Cu) increase the catalytic activity of CdS. Maximum activity showed CdS containing 0.002 - 0.003 at.% of metal admixture. The effect rises in the sequence Cu - Ag - W. The simultaneous change of the photo-emf with the photocatalytic activity of CdS is stipulated by the electronic state of its surface. Experiments with ZnS catalysts showed a very low activity of the latter and a drop in activity effected by metal admixtures. There are 6 tables.

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