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Molybdenum Disulfide as a Catalyst in Hydrogen Fuel Cells

Molybdenum disulfide (MoS_2) is a common industrial lubricant that can also be used as an active catalyst to speed up the rate of hydrogen and oxygen in the process of electrolysis. This experiment was conducted to find if molybdenum disulfide has a catalyzing effect on the chemical process of electrolysis, which is the reaction that produces energy in a hydrogen fuel cell.

The man-made compound was put into a device that split water. The hydrogen and oxygen production rate was measured to compare the molybdenum catalyst against no catalyst.

From the quantitative results of the executed experiments, it can be stated that: Molybdenum disulfide powder is an active, natural catalyst that does speed up oxygen production by 3.9% and hydrogen production by 19.7% of the time it takes to produce the same amount of both elements with no catalyst. This conclusion is based on the results that show that this catalyst is faster at producing both hydrogen and oxygen. As tables 2 and 3 (pg. 5) both show, the test results for those tests with a catalyst and without are different. In agreement with the original hypothesis that states: If molybdenum disulfide, used as catalyst, affects the process of turning electrical energy into hydrogen and oxygen, then the disulfide can be used in a hydrogen fuel cell as an active non-molecular catalyst. I can confidently conclude that the results showed that the molybdenum disulfide does affect this process of electrolysis and can be used in a hydrogen fuel cell.