Electrocatalytic Systems for the Generation of Molecular Hydrogen From Aqueous Feedstocks

**Title:** Electrocatalytic Systems for the Generation of Molecular Hydrogen from Aqueous Feedstock

**Invention:** A new metallopolymer catalyst has been synthesized to be utilized for water electrolysis, targeting energy storage from solar power production. Initial studies have shown that these metallopolymers have high turn-over frequency and improved stability in aqueous systems for producing hydrogen.

**Background:** The hydrogen evolution reaction (HER) is a reaction used in electrochemical water splitting in order to produce hydrogen (H2). Platinum and other catalytic materials have been commercially used or experimentally tested as cathodes for hydrogen production. This catalyst has been developed as a mimic of a biological catalyst for hydrogen reduction. Increased demand for hydrogen, use of hydrogen as a non-carbon fuel source, and interest in enabling electrochemical processes for energy storage from solar power drive the need for catalysts with improved performance.

**Applications:**
- Solar power energy storage
- Electrolysis
- Water-splitting
- Hydrogen production

**Advantages:**
- Water soluble
- High turnover frequency (TOF)
- Improved catalyst life

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