

Short Communication

## Electrocatalytic Hydrogen Evolution Reaction Using meso-tetrakis-(pentafluorophenyl)porphyrin iron(III) chloride

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This study focuses on the electrochemical catalysis of proton reduction into hydrogen using meso-tetrakis-(pentafluorophenyl)porphyrin iron(III) chloride in the presence of Et<sub>3</sub>NHCl. Indeed, the direct reduction of Et<sub>3</sub>NHCl on vitreous carbon electrode occurs at E<sub>p</sub> -1.6 V vs Ag/AgCl in [Bu<sub>4</sub>N][BF<sub>4</sub>]-CH<sub>3</sub>CN, whereas the reduction potential shifts to -1.3 V vs Ag/AgCl in the presence of Fe(PFTPP)Cl. Based on the gas chromatography analysis, the formation of H<sub>2</sub>, with a current efficiency of ca. 58% after 3.8 h, is achieved with a yield of 8 μmoles and a turnover number of 8 while the chemical yield was about 80%. These results reflect the effect of the presence of electron withdrawing pentafluorophenyl groups around the metal in Fe(PFTPP)Cl.

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**Keywords:** electrocatalysis; hydrogen; iron complex, porphyrin

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