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## Preparation of Fe(VI) from waste steel pickering liquid

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Fe(VI) is a powerful green oxidant with a reduction potential being 2.2 V under acidic condition, even greater than ozone. It is generally converted into Fe(OH)<sub>3</sub>, a non-toxic final product. The present study uses wet chemical method to prepare K<sub>2</sub>FeO<sub>4</sub> with a waste steel pickering liquid that is rich in FeCl<sub>2</sub>. Chemicals used for the preparation are NaOH, KOH, and small amount of organic solvents like methanol and ether for final washing of the reaction product. Purity of the homemade K<sub>2</sub>FeO<sub>4</sub> is greater than 90%, comparable to a commercial product. De-colorization rate of methylene blue in water solution with the K<sub>2</sub>FeO<sub>4</sub> is rapid, reaching colorless in a few seconds in a test with Fe/C mole ratio of about 1/1. X-ray absorption technique reveals that the homemade K<sub>2</sub>FeO<sub>4</sub> comes with an even greater pre-edge peak than a commercial product does, indicating a higher purity than the commercial one. Experiments for determining a total mass balance of Fe, Na, K, and Cl are completed to provide necessary information for evaluating the cost of preparing the K<sub>2</sub>FeO<sub>4</sub>.

### Biography

Yu-Ling Wei completed his PhD from Penn State University in 1985 and has served as a faculty member for Tunghai University of Taiwan since 1987.

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