Abstract Submitted
for the NEF10 Meeting of
The American Physical Society

Water Based Biological and Photochemical Batteries JIAN ZHANG, Dr. J. Consulting — The designs of prototype batteries are described based on some biological Fenton reactions and the photo-excitation of singlet oxygen and ferrous complexes. The biological batteries consist of hydrogen peroxide in the cathode, and some cold medicines complexed with ferrous gluconate in the anode. Sodium chloride is used as the electrolyte and the anode material is suspended in an aqueous paste of wax, cellulose, stearate, and polyethylene glycol, etc. The batteries generate a voltage of up to 0.4 V and a current of about 0.05 mA in a thin electric wire. The photochemical batteries consist of water or aqueous paste of ferrous gluconate in the anode that is irradiated by sun light, and the cathode is submersed in un-irradiated water or solutions of the cold medicines. These batteries generate a voltage of up to 0.3 V and a current of about 0.02 mA in a thin electric wire. The voltage can be increased by connecting the batteries in sequence and the current can be increased by connecting them in parallel. The advantages of these batteries are that the building materials are nontoxic and have ample supply in the nature. In addition, the electrolyte paste used in the batteries may be acting like a semiconductor.

Jian Zhang
Dr. J. Consulting

Date submitted: 14 Sep 2010 Electronic form version 1.4