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Abstract. This study investigates the adsorption of phosphorus by nanoscale zero valent iron (NZVI) in the presence of copper chloride. The NZVI used for the experiments was synthesized under optimum conditions using the chemical reduction method. The NZVI was characterized by transmission electron microscopy, X-ray diffraction, Brunauer–Emmett–Teller surface characterization and particle size analysis. Batch experiments were performed under different conditions to study the effect of parameters such as initial phosphorus concentration, copper chloride load, aerobic, anaerobic, pH and recovery. The results indicated that the presence of copper chloride effectively enhanced the adsorption capacity of phosphorus as it produced copper ferrite spinel on NZVI particles' surface which can adsorb phosphorus and increase its rate of adsorption, and also it stimulated NZVI corrosion. The adsorption capacity of phosphorus reached 50 mg PO_4^{3-}-P/ g NZVI in the presence of copper chloride while NZVI without copper chloride reached the maximum adsorption capacity of 28 mg PO_4^{3-}-P/ g NZVI. Phosphorus recovery batch