UNIVERSITAS
GADJAH MADA

STUDI DEGRADASI ZAT PEWARNA NON AZO MENGGUNAKAN FERRAT (FeO4^2-)
Nita Kusumawati, Dr. Roto, M.Eng.; Prof. Dr. Mudasir, M.Eng.
Universitas Gadjah Mada, 2008 | Diunduh dari http://etd.repository.ugm.ac.id/

STUDI DEGRADASI ZAT PEWARNA NON AZO MENGGUNAKAN FERRAT (FeO_4^{2-})

Nita Kusumawati
24694/I-4/2033/06

INTISARI

Telah dipelajari sintesis kalium ferrat dan aplikasinya dalam degradasi zat pewarna non azo meliputi rhodamin-B, naftol dan metilen biru. Tujuan penelitian ini adalah untuk mempelajari degradasi zat pewarna rodamin-B, naftol dan metilen biru menggunakan kalium ferrat. Penelitian ini diawali dengan sintesis dan karakterisasi kalium ferrat sebelum direaksikan dengan rhodamin-B, naftol dan metilen biru. Stabilitas larutan kalium ferrat pada sejumlah pH telah diteliti. Beberapa faktor yang mempengaruhi proses reaksi seperti pH dan rasio molar Fe(VI):zat pewarna telah dipelajari. Hasil degradasi dikuantisasi menggunakan spektrofotometri UV-Vis. Reaksi antara ferrat dengan rhodamin-B, naftol dan metilen biru diteliti dengan rasio molar Fe(VI):zat pewarna bervariasi, mulai 1:1 – 5:1.

Prosedur sintesis kalium ferrat memberikan kemurnian tinggi (90%). Dari spektra XRD, ditemukan bahwa ferrat memiliki struktur tetrahedral dengan *space group* D_{2h} (Pnma). Larutan kalium ferrat memiliki kestabilan maksimum pada pH 9-10 . pH optimal untuk degradasi rhodamin-B, naftol dan metilen biru, masing-masing adalah 9; 9,4 dan 9,6. Pada pH ini dan pada rasio molar Fe(VI):zat pewarna 5:1, masing-masing sebanyak 100, 95,4 dan 100% senyawa rhodamin-B, naftol dan metilen biru dapat terdegradasi setelah reaksi selama 30 menit.

UNIVERSITAS
GADJAH MADA
STUDI DEGRADASI ZAT PEWARNA NON AZO MENGGUNAKAN FERRAT (FeO4^2-)
Nita Kusumawati, Dr. Roto, M.Eng.; Prof. Dr. Mudasir, M.Eng.
Universitas Gadjah Mada, 2008 | Diunduh dari http://etd.repository.ugm.ac.id/

STUDY ON DEGRADATION OF NON AZO DYE USING FERRATE (FeO_4^{2-})

Nita Kusumawati
24694/I-4/2033/06

ABSTRACT

Synthesis of potassium ferrate and its application in degradation of non azoic dyes such as rhodamine-B, naphthol and methylene blue have been studied. The purpose of this research is to study degradation of rhodamine-B, naphthol and methylene blue using potassium ferrate. Synthesis and characterization of potassium ferrate were performed before it was reacted with rhodamine-B, naphthol and methylene blue. The aqueous stability of potassium ferrate at various pH values was investigated. Some parameters influencing degradation process reaction such as pH and molar ratio of Fe(VI):dye have been studied. The progress of reaction was followed by *UV-Vis* spectrophotometry. The aqueous reaction of ferrate with rhodamin B, naphthol and methylene blue was also investigated with a molar ratio of Fe(VI):dye in the range of 1:1 – 5:1.

The synthesis procedure of potassium ferrate gives a high purity (90%). From XRD spectra, it was found that samples of the solid have a tetrahedral structure with a space group of D_{2h}(Pnma). It was found that potassium ferrate solution had a maximum stability at pH 9-10. The optimal pH for rhodamine-B, naphthol and methylene blue was 9; 9.4 and 9.6, respectively. At these pH and a Fe(VI):dye molar ratio of 5:1, approximately 100; 95,4 and 100% of the rodhamine-B, naphthol and methylene blue rescpectively were degraded after 30 minutes of reaction.