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Remarkable degradation of methyl orange by tetragonal zirconia catalyst

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Abstract

A *t*-ZrO_2 catalyst was prepared through a simple electrochemical method at a lower calcination temperature which resulted in superior photoactivity toward methyl orange (MO) decolorization. An amount of 0.4 g L^{-1} of *t*-ZrO_2 catalyst was found to be an optimum dosage for 10 mg L^{-1} MO, which resulted in a complete decolorization after 1 h of contact time at pH 3 under fluorescent light. Good photo-activity toward decolorization of MO promises the *t*-ZrO_2 catalyst to be used in textiles industry wastewater treatment and also other applications.

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Keywords: t-ZrO_2; Electrochemical; Decolorization; Low calcination temperature; methyl orange

1. Introduction

Access to sufficient water sources is a noteworthy issue that influences countries everywhere throughout the world, while the specific issue differs in every country, it is conceivable to classify the main issue as having either limited access or substandard access to this indispensable asset. Moreover, this circumstance is required to wind up noticeably more extreme as environmental change and water shortage happened around the world [1-4]. Wastewater treatment is thought to be a traditional way to deal with confronting deficient water supply [5-7]. In the last few

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