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IMPACT OF TEXTILE INDUSTRY EFFLUENT ON ENVIRONMENT AND THERE
REMOVAL BY PHOTOCATALYTIC DEGRADATION USING NANO CATALYSTS:
A REVIEW

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ABSTRACT

Textile industries are however major consumers of water, dyes and other toxic chemicals. The effluents generated from each processing step comprise substantial quantities of unutilized resources. The effluents if discharged without prior treatment become potential sources of pollution due to their several deleterious effects on the environment. Photo catalysis is a rapidly expanding technology for wastewater treatment. In this review the chemical effects of various variables on the rate of degradation of different pollutants are discussed in detail. The effects of adsorption, temperature, intensity of light, pH, and the presence of anions, cations, etc. have been specifically covered. The photo catalytic degradation of dyes was studied using Nano titania–zirconia composite catalyst from textile wastewater. The textile effluent was characterized by various analytical procedures before treatment. The effects of initial pH of the solution, effluent concentration, catalyst concentration and air flow rate on the degradation of pollutants were investigated on the basis of chemical oxygen demand.

Keywords- *Textile industry waste, Chemical oxygen demand, Photo degradation, Nano catalyst (Titanium di oxide, Zinc oxide etc.)*

I. INTRODUCTION

Environment pollution are not monitored and controlled, although they are known or suspected to cause harmful ecological effects and can be deleterious to human health [1]. Industry effluents released produce a high degree of organic pollution in both aquatic and terrestrial ecosystems. They also alter the physical and chemical characteristics of the receiving aquatic bodies [2]. In the present study, the effect of bacterial isolates on the reduction of physical & chemical characteristics in industries effluent was investigated [3]. Pollution has become the biggest environmental challenge. Textile polluted water contains large amount of organic and inorganic compound which reduce Dissolved oxygen in water and increase chemical oxygen demand and Biological oxygen demand. In recently years study we find out that pollution to be controlled by photo catalysis reaction in which dissolved polluted is reduce by photo degradation with the help of Nano catalyst.

Textile industries effect on environment

In the textile industry, many different processes are used and almost all of them generate wastewater. The effluents resulting from these processes differ greatly in composition, due to differences in processes, used fabrics and machinery [4]. Textile wastewater is usually treated as a mixed stream. For water and chemicals reuse purposes however, it is preferable to keep process streams apart and treat them separately [5]. Characterization of textile industry effluents is of great importance for the separate treatment of process streams [6]. This literature review provides an overview of what is known about the wastewater of the separate processes, and the methods used for characterization of these streams.

Photodegradation PROCESS & NANO CATALYSTS

In recently years study we find out that pollution to be controlled by photo catalysis reaction in which dissolved polluted is reduce by photo degradation with the help of Nano catalyst. Photo catalytic degradation is a process where the organic contaminant in water is degraded by UV light. UV photo oxidation acts to degrade and remove organic compound through the ultraviolet radiation to activate the catalyst [7]. Some catalyst are generally using just like Titanium di oxide, Zink Oxide, Gold nanoparticle etc.

In all study, various oxide and sulphides use as photo catalytic process some Nano catalysts their nature reduce Titanium dioxide was first produced commercially in 1923 [8]. It is obtained from a variety of ores. The bulk material of titanium dioxide is widely nominated for three main phases of rutile, anatase and brookite [9]among them, the Titanium di oxide exists mostly as rutile and anatase phases which both of them have the tetragonal structures.titanium di oxide is easily prepare by titanium isopropoxide Titanium di oxide is mainly applied as pigments, adsorbents, catalyst supports, filters, coatings, photoconductors, and dielectric materials[10]. In recent years, Titanium di oxide has been well known as a semiconductor with photo catalytic activities and has a great potential for applications such as environmental purification, decomposition of carbonic acid gas, and generation of hydrogen gas [1].

II. CONCLUSION

A detailed survey of literature reveals that industry gets polluted water and decreases dissolved oxygen and increase COD in water bodies. The value of COD is minimize by photodegradation by TiO₂ nanocatalyst and that Nano catalyst is used because of activity in UV light. With the help of TiO₂ catalyst we can reduce value of chemical oxygen demand in polluted water sample.

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