VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590010

PROJECT REPORT ON

"REMOVAL OF COLOUR FROM TEXTILE WASTE WATER BY USING ORANGE PEEL"

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Certificate

Certified that the project work entitled **"REMOVAL OF COLOUR FROM TEXTILE WASTE WATER BY USING ORANGE PEEL"** is a bonafide work carried out by

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students of Department of Civil Engineering of Alva's Institute of Engineering and Technology in partial fulfillment for the award of **BACHELOR OF ENGINEERING in CIVIL ENGINEERING of the VISVESVARAYA TECHNOLOGICAL UNIVERSITY BELAGAVI** during the year 2020–2021. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the departmental library. The project report has been approved as it satisfies the academic requirements in respect of Project work prescribed for the Bachelor of Engineering Degree.

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ABSTRACT

The objective of this project work is to study the adsorption of Malachite Green dye using orange peel adsorbent. Cheap and eco-friendly adsorbent has been used for removal of malachite green dye from aqueous solution. Liquid phase batch operations were carried out to observe the effect of various experimental parameters such as contact time, temperature, pH, initial concentration of malachite green, adsorbate dose and the optimum conditions for these parameters were evaluated. Various characteristics of the orange peel sample were also examined. The results indicated that orange peel can be used as a good low-cost alternative for treatment of effluents containing malachite green in water.

Use of various dyes in order to color the products is a common practice in textile industry. The presence of these dyes in water even at low concentration is highly visible and undesirable. The adsorption process is being extensively used for the removal of dyes from dye house effluents by various researchers. The most widely used adsorbent is commercially available activated carbon. Despite the frequent use of adsorption in wastewater treatment systems, commercially available activated carbon remains an expensive material. In recent years, the safe and economical methods are required for the treatment of dye house effluents, which involved researchers to focus towards the preparation of low-cost adsorbents from cheapest sources. This study was carried out for the utilization of orange peel as adsorbent for the removal of dyes from wastewater and to establish it as a standard wastewater treatment process for textile dyeing industry. The materials were obtained and treated for the removal of dyes at different doses. These materials also evaluated for different RPM, contact time and pH. This batch adsorption experiment was carried out for finding the effects of adsorbent's dosage, RPM, pH and retention time on the removal of dyes from the wastewater. The experiment showed that the removal percentage is 88.04 at pH of 10, dosage of 2.5g/L, retention time of 120 minutes and RPM of 90.

Keywords: Adsorption, Dosage, Dyes, pH, RPM, Time, Wastewater.