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Introduction

Organic dyes is one of the major groups of pollutants widely used in textile, plastic, medicine and many other industries, while the hazardous e cts of organic dyes in waste water have been a major concern and now a major threat in the environment due to the substantial pollution problems caused by them. ese industries exhausted large quantity of high content color e uents, which are generally more toxic and resistant to destruction by conventional methods. A necessary criterion in the use of these dyes is that they must be highly accumulated in water and stable in light during washing. e accumulation of these dyes in the water bodies causes eutrophication, reduces the reoxygenation capacity and makes severe damage to the aquatic organisms by hindering the in ltration of sunlight [1]. ey must also be resistant to microbial attack. erefore, they are not readily degradable and are typically not removed from water by wastewater treatment systems and conventional methods like adsorption, ultra ltration, chemical and electrochemical methods [2]. e superiority of photocatalytic degradation by nanoparticles in wastewater treatment is due to its advantages over the conventional methods, such as quick oxidation, no formation of polycyclic products and oxidation of pollutants. It is an e ective and rapid technique in the removal of pollutants from wastewater [3]. In the recent years, numerous metal oxides including TiO_{22}

Methylene violet (MV)

MV is a mixture of methylene blue and diluted alkalis that are mainly used as dyes for textiles to give deep violet. Based on the methyl groups Methylene violet function was varied. e relative absorbance of MV band was observed at 608 nm (Figure 6). A er 30 min the addition of the sample S, R and L to the dye, the absorbance is gradually decreased and is shi ed to higher wavelength. e decrease of absorbance is indicating the ability of phytoextract to degrade MV. System containing dye with di erent size of di erent explant extracts of AgNPs at the end of 30 min time interval showed a marked decrease in the absorbance of MV and increase of SPR peak of AgNPs. It reveals that the complete reduction of MV is accomplished in less than 30 min in the presence of AgNPs. e size and surface dependent photocatalytic property has been investigated for sample S, R and L.

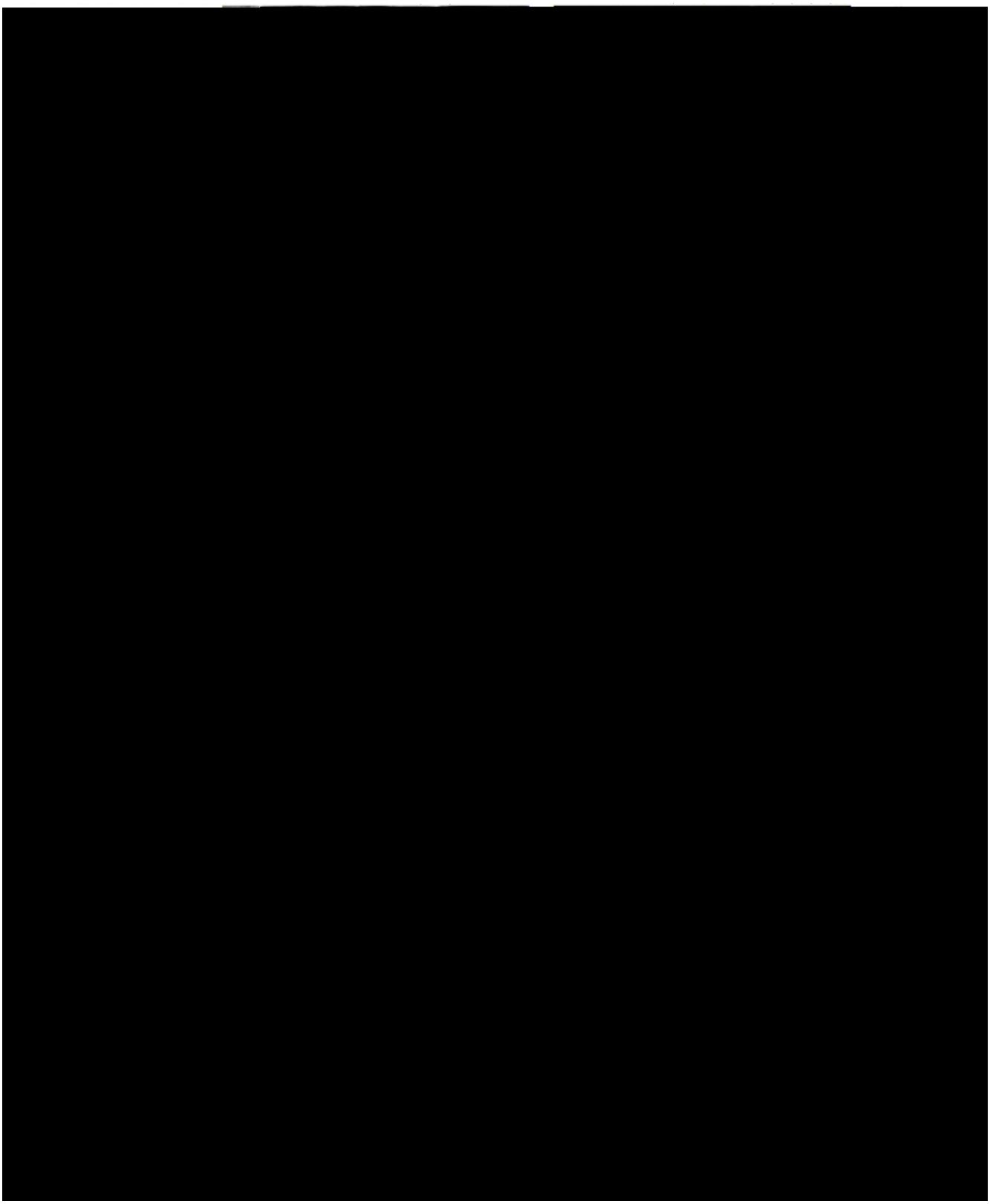

Figure 3: HRTEM images of sample S, R and L at different magniýcations and SAED pattern. The image c, f and i shows the particle size distribution of sample S, R and L.

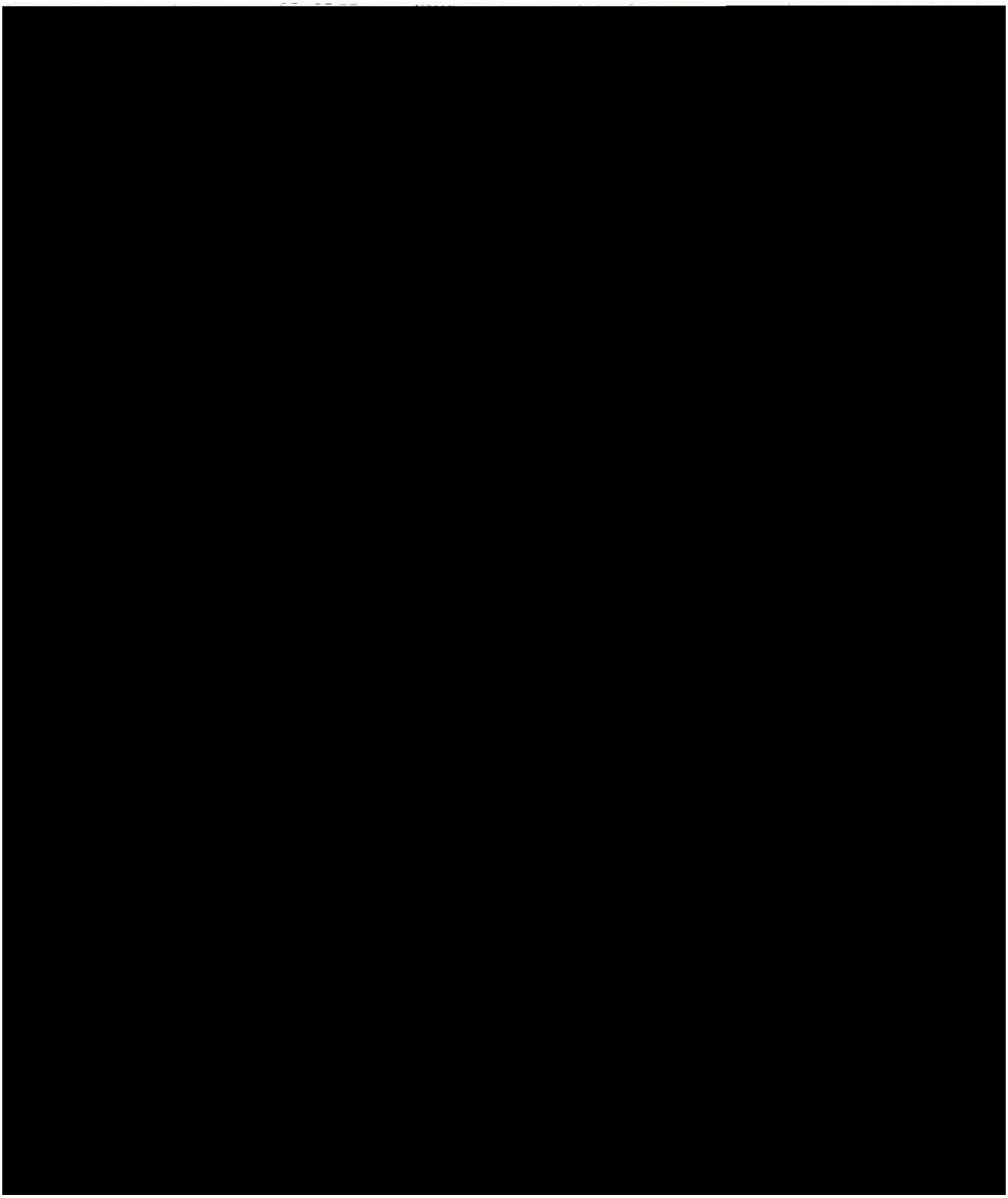

Figure 4: DLS of biosynthesized AgNPs: (a) stem bark (b) root (c) leaf.

Citation:

degradation of di erent organic dyes with di erent biosynthesized AgNPs was analyzed keeping the other parameters constant. e degradation of organic dyes showed enhancement in the rate of degradation with respect to the increasing AgNPs concentration of sample S, R and L (Figure 10 (a-l)). Increasing the catalyst dose of 20 to 100 µg/mL the degradation rate was increased up to 100% was observed in sample S in EMB and approximately 95% degradation for 100 µg/mL dose of sample R and L. e varied concentration of silver nanoparticles showed higher degradation with increase in catalyst concentration was due to the increase in the number of reaction sites.

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