Summary and Conclusion

- Coloured water flowing in rivers and canals of industrial regions of India and their detrimental consequences to agriculture crops and drinking animals including human create awareness and protest against those polluting industries road rogues, road blocks etc. Although, those industries contribute substantially to the nation’s economic development and employment to long sector of people. Considering the essentiality of both events it is dire necessary to find a common solution to protect both events. In this work make a proper treatment of the effluent and converts it almost equal to natural quality for normal use. Keeping this in mind present work is propounded and carried out.

- The development of rapid industrialization, require huge amount of water for its many processing thus most of the natural water sources like rivers around industrial areas provide water and receive large amounts of effluents, either partially treated or untreated which affect the quality of water and the environment. In India, textile manufacture is a major industry and its effluents pose a series threat to water bodies and the environment.

- In Karur, millions of litres of untreated effluents were discharged by the textile factories into the water drains that eventually emptied the water system such as Amaravathy, and ultimately to Cauvery river.

- Mat weaving is an important traditional handicraft of Tamil Nadu which is famous for its korai-gry grass mats in musiri (Vadugappatti). It has several liters of coloured effluents discharged in to water bodies.
• The results pertaining to various physico-chemical characteristics of textile and mat effluent indicated that they exceeding the allowed limit of various organizations like WHO, BIS & ICMR.

• The unaesthetic colour frightened the user more than the toxic chemicals in it.

• To remediate both (textile and mat) dye effluents and save the natural water bodies using the recent and advanced novel nanotechnologies. In this regard Nanobiotechnology is chosen.

• The biological source bitter guord leaf extract was successfully used to synthesize iron oxide (Fe$_2$O$_3$) Nanoparticles

• The iron oxide NPs was biosynthesized using bitter gourd extract and are spherical is size of 45nm.

• This work emphasizes on the successful synthesis of iron oxide NPs through green chemistry principles using leaf extract of bitter gourd as a novel reducing agents.

• Synthesised iron oxide NPs are characterized by UV-Visible spectra, Fourier transform infrared spectroscopy (FT-IR), X-ray diffraction (XRD), Scanning electron microscopy (SEM), and Transmission electron microscopy (TEM).

• The obtained results confirmed that the Iron oxide Nanoparticle were crystalline in nature and the morphological studies reveal the spherical shape of particles with size ranging from 60 to 90nm.

• In this study, the synthesized iron oxide Nanoparticles from bitter gourd was used to the TD and MD waste water with the optimized value of iron oxide 2g/L and pH6.
• When compared the efficiencies of textile dye decolorization (91%) to mat effluent dye decolorization (90%) vicinity textile waste water was slightly less decolorized.

• The Water Quality Index studies shows that the values of the textile dye water was very poor and mat water was unsuitable for human drinking and domestic use.

• WQI may prove critical position in the drinking purpose, so that it is not able to use for human being.

• After biosynthesized nanoparticles used decolonization to check the life supporting ability of water grown an animal model Tilapia fish (*Oreochromis mossambicus*) Length (cm), Weight (g), Specific growth (g), Weight gain, length and weight relationship were increased in all the water concentration than control.

• The feed conversion ratio was higher in control treatment and lower in 100% water contraction treatment. Lower feed conversion ratio due to higher growth in 100% water concentration treatment. Aquarium water parameters evaluations showed that physico-chemical characteristics were analyzed. Therefore treated decolorized dye water can be used for aquaculture.

• Identically the effect of decolorized water experimented on green gram seed germination in plating techniques under different water concentration for one week. It show better seed germination such as root lengths shoot length, seedling weight and seed vigor compare with control.

• Thus, decolorized water can be used in on pot experiment in different water concentration. This study shows that growth performance like plant height, leaf
number per plant, leaf area, and stem weight, leaf weight, leaf to stem ratio, total biomass, number of flower and number of seeds were observed in green gram seed.

- Biochemical constituent’s (Total chlorophyll and Total protein) level was higher in 100% treated water than the control treatment.

- The soil nutrient levels pH, EC, N, P, K and Mg which are gradually up to increasing in 100% water concentration than control. These results indicate that the organic matter N, P and other nutrient contents in soil enhanced the growth of plants.

- Thus, iron oxide NPs can be used as the efficient tool for textile dye decolorization and it suggest that the decolorize water can be used for agriculture and aquaculture. They support life (Plant or Animal) as that of natural water.

- Therefore this procedure helps overcome the menace of colored water of either textile or mat effluent.