



Thiagarajar College- Madurai – 625 009
(An Autonomous Institution Affiliated to Madurai Kamaraj University)
(Re-Accredited With 'A++' Grade by NAAC)
Ranked 15th in NIRF 2024

2024 – 2025 – Even Semester – Format for Project Proposal

Department : PHYSICS

1. Name of the Student : **K. Brindha Varshini**
2. Reg. No. and Class : **23PPH11**
3. Name of the Faculty Guide : **Dr. G. Arivazhagan**
4. Proposed Project Title : **Insights into Molecular Interactions:
UV Absorption Spectroscopy and
Refractive Index Analyses**
5. Proposed Objectives of the Project : This project aims to explore molecular interactions in binary and ternary liquid mixtures involving cyclohexane, acetone (aprotic solvent), and ethyl acetate (polar aprotic solvent). The study employs UV absorption spectroscopy to detect shifts in absorption peaks and intensity changes, revealing intermolecular interactions such as dipole-induced dipole, dipole-dipole forces, and potential complex formations. Refractive index measurements using an Abbe refractometer will assess deviations from ideal mixing behavior, offering quantitative insights into the strength and nature of these interactions. Additionally, the project will evaluate the impact of aprotic solvents on the structural dynamics and stability of multicomponent systems, emphasizing their role in molecular association and property modification. By integrating spectroscopic and refractive data, the study seeks to develop a holistic understanding of these mixtures. These insights will not only contribute to solvent design and optimization but also advance applications in chemical processes, materials science, and other interdisciplinary fields.
6. Proposed duration of the Project : **3 Months**

Signature of the Student

Signature of the Faculty Guide

Signature of HoD