



# St. Xavier's College (Autonomous)

(Recognized as "College with Potential for Excellence" by UGC & Accredited at A<sup>++</sup> grade with CGPA of 3.66/4 in IV Cycle by NAAC)

**Palayamkottai – 627 002**

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## ANNUAL REPORT 2023-2024

### CRYSTAL RESEARCH CENTRE

1. The Crystal Growth Research Centre was established with the DST Project entitled Investigations on the preparations, crystal growth, and characterization of guanidine-based NLO crystals for various optoelectronic applications, with a funding amount of Rs 13.44 lakhs for the duration of three years. The research centre has successfully carried out seven M.Sc. projects. The PG candidates have grown and characterized the guanidine carbonate family of crystals as well as amino acid-based crystals. The constant temperature bath instrument has been effectively utilized for its significance in obtaining the crystal's formation. Ms. D. Sathya had successfully completed her Ph.D. and published around 10 articles in Scopus, Web of Science, and UGC Care-listed journals. Currently Two full-time and one part-time research scholar are working in the Crystal Growth Research Center. Ms. M. Josephine Gladiya and R. Akash are full-time research scholars, and Mrs. C. Prasanna Devi is a part-time research scholar. Ms. M. Josephine Gladiya is concentrating on growing new organic and semi-organic single crystals that focus on amino acids and the guanidine carbonate family of crystals for various nonlinear optical applications such as Optoelectronic, Photonic and Laser communication purposes. She has published a research article in the 2023-2024 academic year entitled "Characterization of Gamma-Glycine Crystals Grown in an Aqueous Solution of Cerous Chloride" in the European Chemical Bulletin, which is a SCOPUS-indexed journal, and has published 7 articles in proceedings with an ISBN. She has presented eight papers at National and International Conferences. Currently, this scholar has been growing nonlinear optical crystals, studying characterization techniques, and communicating articles to Elsevier and Springer Journals for publication.
2. R. Akash is concentrating on the thin film research area, and he is concentrating on fabricating a solar cell with FeSe<sub>2</sub>. The scholar is utilizing various facilities available at the laboratory. The scholar has great interest in fabricating a photovoltaic device and

collaborating with the Department of Physics, Central University of Tiruvarur. Mrs. C. Prasanna Devi, a part-time research scholar, is concentrating on growing aminoacid-based crystals and their dopants for various optoelectronic applications. She has published one article in a UGC-listed journal and presented papers at National and International Conferences. Currently, she is growing crystals and exploring the various properties of the crystals by analysing them with suitable characterization techniques. It is necessary to convey that the Crystal Growth Research Centre has emphasized that it is inevitable for crystal growers to work in the desired field with a positive atmosphere.