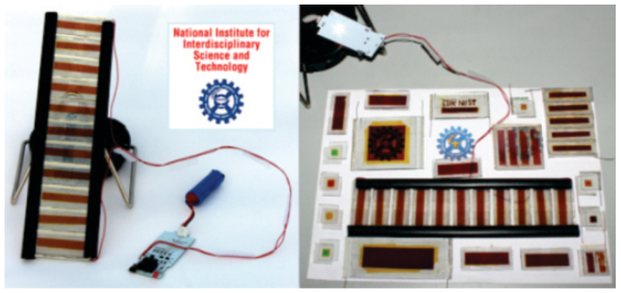
Organic and Hybrid Electronics

Global demand for low cost, efficient and sustainable energy production is ever increasing. Driven by the recent discoveries and innovations in the science and technology of materials, applications based on functional materials are becoming increasingly important. In this program, with the help of a truly interdisciplinary team with people having complementary expertise in material synthesis, nanotechnology, device fabrication and device integration, we work on the development of novel functional materials and composites for organic light emitting diodes (OLEDs), dye sensitized solar cells (DSSCs), electrochromic devices and electrochemical energy storage devices.

Capabilities

- Development of high-efficiency LEDs for solid state lighting and information displays
- Fabrication of chemical sensors using organic field effect transistors
- Development of stimuli responsive chromogenic systems
- Fabrication of DSSC modules using different architectures
- Design and development of energy conversion and storage technologies



DSSC module powered LED reading lamp and a range of manually fabricated modules (series and parallel) at CSIR-NIIST

What we offer...

- Novel routes towards advanced chemical and pharmaceutical intermediates
- Development of new fluorescent materials and inks for security applications
- Development of photochromic and elcetrochromic materials
- Chemical profiling of medicinal plants

Chemical Sciences and Technology Division has a large number of projects sponsored by Government funding agencies as well as private industries and has collaborative projects with national and international organizations and institutes.

Industrial Partners

CORNING

سابك sabic

GAIL (India) Limited

HLL Lifecare Limited
(A Government of India Enterprise)

THE MANIPAL GROUP — MANIPAL TECHNOLOGIES LTD.

ARON UNIVERSAL

VINVISH Technologies Pvt. Ltd.

SANDHAR Sandhar Technologies Limited

Contact Details

Head
Research Planning & Business Development Division
CSIR-National Institute for Interdisciplinary Science and Technology
(CSIR-NIIST)
Thiruvananthapuram 695019, Kerala, India
Email: rpbd@niist.res.in
Phone: +91 471 2515270, Fax: 471-2491712

सीएसआईआर-राष्ट्रीय अंतर्विषयी विज्ञान तथा प्रौद्योगिकी संस्थान
सीएसआईआर-एनआईआईएसटी
तिरुवनंतपुरम

CSIR-NATIONAL INSTITUTE
FOR INTERDISCIPLINARY SCIENCE
AND TECHNOLOGY
CSIR-NIIST
THIRUVANANTHAPURAM

Platinum Jubilee 1942-2016
75 Years of
CSIR Touching Lives

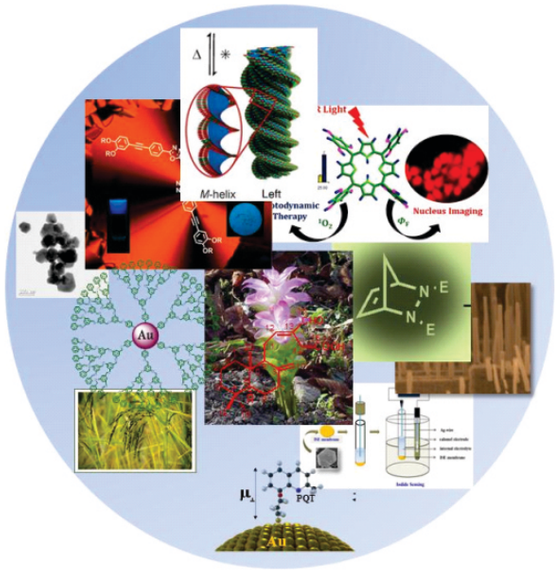
Chemical Sciences & Technology

Chemical Sciences & Technology

About Us: Chemical Sciences and Technology Division (CSTD) has the rich tradition of research in the interdisciplinary frontier areas of chemistry-biology and chemistry-materials and exploring the use of such materials for industrial applications using innovative environmentally acceptable technologies. The division has a strong academic program nurturing research students in basic and interdisciplinary sciences.

Areas of Research

- Basic and applied research in the areas of photochemistry and photonics
- Natural products and Ayurveda
- Development of new methodologies for the fine chemical industry
- Polymers and inorganic materials for organic and hybrid electronics
- Computational Chemistry



Our Vision:

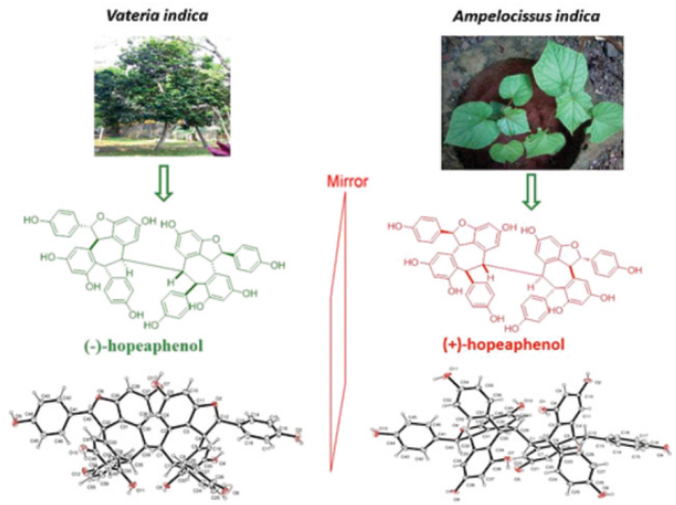
To be internationally recognized for excellence in discovering new knowledge about functional materials and natural products/bioactive molecules, and to develop such materials/molecules for industrial applications using innovative, cost-competitive, and environmentally acceptable processing technologies.

Natural Products and Ayurveda

Kerala with its abundance of diverse flora and traditional knowledge is a well known hub for Ayurveda. With the aim of utilizing this traditional knowledge and the rich biodiversity, a multidisciplinary approach is being carried out against deadly diseases involving natural product chemistry, molecular and cellular biology, synthetic and analytical chemistry, biochemistry, pharmacology, botany and social sciences.

Capabilities

- *Research and Development in the area of phytochemicals*
- *Research on new phytopharmaceuticals alternate bio-actives*
- *To provide scientific support / validation to Ayurvedic products*
- *Chemical fingerprinting of Ayurveda formulations*
- *Standardization of raw materials / finished products*



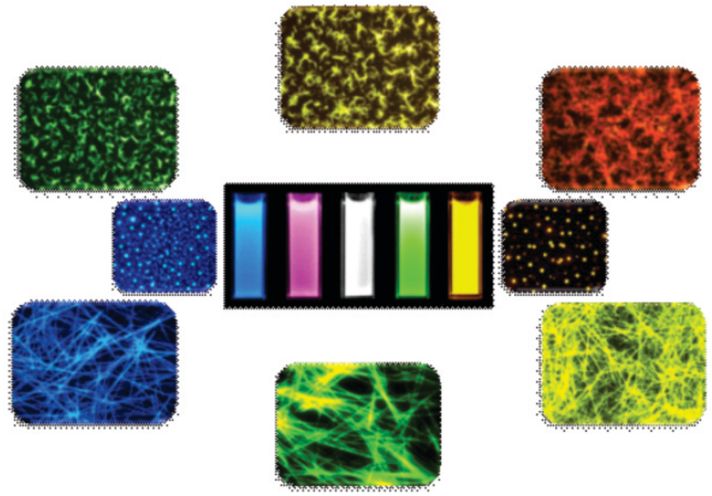
The expertise of the division in the area of **synthetic organic chemistry** is being utilized for functionalization of natural products, synthesis of chemical intermediates and advanced pharmaceutical ingredients (APIs).

Fluorescent Materials

Chemical Sciences and Technology Division of CSIR-NIIST has proven expertise in the area of fluorescent dyes and related investigations on their fundamental and photophysical properties. The current program is an effort to channeise this multidisciplinary expertise into developing useful technology.

Capabilities

- Development of fluorescent fibers and inks for security applications
- Fluorescence and Surface Enhanced Raman Spectroscopy (SERS) based probes for diagnostic and theranostic applications
- Development of novel nanoprobes for cancer diagnosis and therapy
- Design and development of multimodal probes for targeted cellular imaging



Different varieties of fluorescent materials developed in CSTD