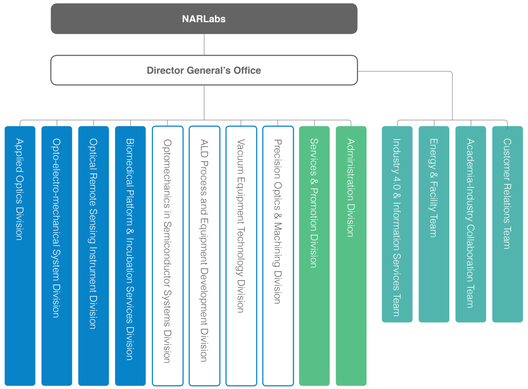
HISTORY

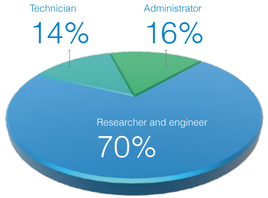
Since its establishment in 1974, Instrument Technology Research Center (ITRC) has been known as a pioneer in vacuum and optics technology and is now dedicated to the development of frontier instrument technology platforms for fulfilling the goals of national technology policy and the requirements for industrial economic growth. With a sophisticated service platform for advanced instrument applications, ITRC aims to bridge the academia and industry, providing innovative engineering, prototyping, and customization. ITRC is constantly pursuing the ideal of "Local Impact, Global Excellence."

Organization & Human Resources



Headcount

Instrumentation research and development have always been the major task for ITRC, with 71% of the current 160 staffs having master or PhD degrees. Among them, 70% are researchers and engineers, 14% are technicians, and 16% are administration employees.



EXCELLENCE IN SERVICE

For research dissemination and advocacy of instrument technology, ITRC values technical services as much as research development. Aiming to make contributions to the society, ITRC has provided numerous instrument system innovations, human-machine interface developments, and as-built measurement services. Through the aforementioned projects, ITRC has accomplished many technological transfers and technical services.

Just like the dream manufacturer, the core value of ITRC is to encourage and realize R&D creativity for emerging industrial application.

Other technical services provided by ITRC range from instrument periodical publication, technical training courses, cooperated projects, to service cases on instrument fabrication and repair. By involving graduate students through holding research projects and scientific activities, ITRC attains to encourage the young generation to take active roles in the innovation, design, and assembly of instruments.

Moreover, ITRC established IEEE Instrumentation & Measurement Society (I&M S) Taipei Chapter for encouraging communication among national and international instrumentation societies and reinforcing national competence. Through different channels like international research exchange programs and workshops, we approach and respond to the real needs of the field, exhibiting our capabilities to the world.

Contact Us

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Instrumentation for Discovery
Innovation for Better Life

Instrument Technology Research Center

NARLabs
National Applied Research Laboratories

Vision

To innovate instrument technology, pursuit public benefit, and progress sustainably.

Mission

- To pioneer in instrument-related frontier research foreseen by the nation.
- To develop instrument technology required by the industry, help upgrade industrial technology, and promote industry economic benefit.
- To cultivate the talents, encourage self-making instrument, and advance instrumentation standard.

Academia-Industry Translation for Entrepreneur Initiative

In the field of opto-electro-mechanical system and vacuum technology, ITRC sustainably develops its optical, electronic and mechanical technology capabilities to build up an innovative model for academia-research-industry cooperation. With its innovation and customization, ITRC is dedicated to bridging the industry and academia through providing advanced technologies. Our long term prospect is to advance national science and academic research competence, achieve global excellence, promote economic value, and improve the quality of lives for the public.

← Remote Sensing Instrument

↑ Projection Lens for 3D IC-TSV Stepper Assembly

CORE R&D AREAS

ITRC's tenacious endeavor to advance its core technology can be seen from its achievements in three major fields: "**Opto-electro-mechanical System**", "**Precision Optics & Machining**" and "**Vacuum Technology and Microstructure**".

Opto-electro-mechanical System

To provide prototyping services with instrumentation control capability and system integration.

For decades, ITRC has devoted itself to the goals of instrument system integration, intelligent human-machine interface, and visual instrument technology. With 40-year experience in optics, mechanics and electronics, ITRC has not only developed a great deal of technology capabilities for opto-electro-mechanical system integration, but also established itself as a significant R&D cultivator in the field, providing completed system integration and application services.

System Design & Integration

- Intelligent Human-Machine Interface
- Portable Modular Design
- Machine Vision
- Integrated Remote Control and Monitoring

Advanced Optical Component/System Design & Integration

- Hyper Raman Imaging System
- Heterodyne Signal Demodulation System of Near-Field Scanning Optical Microscopy (NSOM)
- Automatic Optical Inspection System (AOI)

Optoelectric Remote Sensing

- Spaceborne Remote Sensing Instrument
- Infra-red Night-Vision Instrument
- Hyper Spectral Imager
- Aerial Photogrammetry Instrument
- Early Warning Systems for Disaster

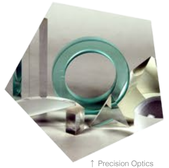
Precision Optics & Machining

To provide precision optics and machining components, system construction service platform with 40 years of opto-mechanical capability.

The purpose is to provide the academia with optical mechanical parts, assist the industry to develop precision optics system prototype, and construct advanced optical instrumentation system service platform. From the roots of precision optics and machining and extending with optical remote sensing technology, ITRC progressively compiles its versatile portfolio in optical design, aspherical fabrication, precision machining inspection and fabrication, qualification inspection for optical thin film technology, and so forth. Besides enhancing component fabrication service platform, design, fabrication & testing for optics & optical system are the major targets as well.

- Precision Machining Fabrication & Inspection
- Aspheric Mirror Fabrication & Inspection
- Ultra-Precision Freeform Machining
- Meter-Scale Aspheric Mirrors Fabrication for Aerospace Application
- Design, Fabrication & Testing for Optics & Optical System
- Astronomical Observation Customization
- Optics for Stepper & Aligner

↑ Bi-directional View Lens



↑ Precision Optics

↑ Large Aspherical Mirror for Space Application

↑ Portable Inspection System for Human Skin Disease

↑ Polishing Technology

Aspheric Stitching Interferometric Inspection →

Vacuum Technology and Microstructure

To provide advanced vacuum system deveopment, thin film and micro/nano structure fabrication and measurement service platform.

As one of the vacuum technology origins in Taiwan and the pioneer research center of micro/nano structure application technology, ITRC is currently concentrating on advanced thin film coating as well as the development, measurement and calibration for vacuum system, expanding with inspection system for semiconductor, micro structure fabrication, and nano electron scanning probe microscopy capability.

Advanced Thin Film Equipment Development

- Atomic Layer Deposition System (ALD)
- 12" in-line ALD
- Vacuum System & Inspection

Space Quality Coating Technology

- Optical Thin Film Coating & Testing

Microstructure Fabrication

- Electron Beam Lithography
- Focused Ion Beam Fabrication
- Inductively Coupled Plasma Reactive Ion Etch
- Scanning Probe Microscopy

↑ Multispectral Band-Pass Filter Array

↓ Aberration-corrected Scanning Transmission Electron Microscopy

↑ Large-aperture Lens Coating System

INNOVATIVE ENGINEERING SERVICES

R&D Engineering Prototype Platform

Accomplishing the integration of optics, electronics and mechanics as well as vacuum technology, ITRC moves to construct R&D engineering prototype platform. Bridging the academia and industry, ITRC aims to assist the academia to commercialize its innovation through practical technology. Under the principle of innovation and customization, ITRC connects open innovation with user-guided R&D, fulfilling its long-term prospect, Three In One – Academia, Research & Industry: Engineering support system for start-ups.

Open Innovation

Through the cooperation with the industry and academia, ITRC has the opportunity to share its technologies and sources with the world. As consequence of engaging in global market, ITRC is gathering more innovations, integrating with its core values, and making further development of its high-quality service platforms to create more benefits.

User-Guided R&D

Believing in "begin with the end in mind," ITRC prioritizes the requests of the users. All the research and development has to fulfill the demand of industrial economy and the public. It has always been the most significant mission for ITRC to commercialize the innovation and apply in the industry, creating economic values.

Research Consortium

To decrease the gap between academia and industry, ITRC attains to commercialize academia innovation, achieving goal of "Local Impact." Foundation of "Academia-Industry Translation for Entrepreneur Initiative" reinforces understanding between the two. Technical communication meeting and short-term training course are some of the channels used for bilateral connection.

In-House Incubation

With outstanding capability on opto-electro-mechanical, vacuum technology, and system integration, ITRC aspires to be a great innovative incubator, supporting the industry and academia to innovate, exploit, and increasing national competence.

Joint Research Labs

Joint research laboratories are founded to integrate R&D capabilities and to meet industry request. ITRC attempts to promote advanced fabrication, focus on the development of equipment & key components, and enhance inspection & accreditation. Furthermore, it is expected to assist the start-ups to establish their own systems and vertical collaboration, progressively building up their capability.