



University : National Chin-Yi University of Technology
Country : Taiwan
Web Address : www.ncut.edu.tw

[SDGs 1] No Poverty

[1.4.1] Does your university as a body provide assistance in the local community assisting the start-up of sustainable businesses through relevant education or resources? (e.g. mentorship programmes, training workshops, access to university facilities)?

NCUT's Initiative in Greenhouse Gas and Product Carbon Footprint Inventories

National Chin-Yi University of Technology (NCUT) is at the forefront of supporting enterprises in their journey towards sustainability and compliance with international environmental standards. Recognizing the growing importance of Environmental, Social, and Governance (ESG) criteria and the pressing need for carbon management, NCUT has taken significant steps to bolster its capabilities and assist enterprises in conducting comprehensive greenhouse gas (GHG) and product carbon footprint inventories.

Training and Certification:

NCUT has increased the number of faculty members certified as ISO 14064-1 GHG inventory lead verifiers and ISO 14067 product carbon footprint lead verifiers. This certification ensures that the university has the expertise to conduct accurate and reliable carbon inventories for various enterprises.

Enterprise Support:

NCUT provides inventory services for businesses to help them comply with supply chain requirements and international regulations, such as those required by the European Union for exporters.

Approximately 190,000 Taiwanese companies must conduct carbon inventories due to these requirements. NCUT's support is crucial for these businesses to achieve compliance and maintain their market competitiveness.

Importance of Carbon Inventories

ISO 14064-1 (Greenhouse Gas Organizational Inventory): This standard specifies principles and requirements at the organizational level for quantifying and reporting GHG emissions and removals.

ISO 14067 (Product Carbon Footprint): This standard provides guidelines for quantifying and communicating the carbon footprint of products, which encompasses the total GHG emissions over a product's lifecycle.

Benefits for Enterprises

Compliance and Market Access: Ensures that companies meet international regulatory requirements, facilitating access to global markets, particularly the EU.



Energy Saving and Cost Reduction: Identifies opportunities to enhance energy efficiency, leading to reduced operational costs.

GHG Emission Reduction: Helps in the systematic reduction of greenhouse gas emissions, contributing to global climate change mitigation efforts.

Competitive Advantage: Supports businesses in achieving a low-carbon status, which can be a significant competitive differentiator in the market.

New Value Creation: Encourages the development of green products and services, opening up new business opportunities and markets.

NCUT's Role in ESG and Sustainability

NCUT's initiatives align with the broader ESG sustainability goals that many international customers and enterprises are striving to achieve. By equipping faculty with the necessary certifications and providing comprehensive carbon inventory services, NCUT plays a pivotal role in driving the sustainability agenda forward. This support not only benefits the enterprises but also enhances NCUT's reputation as a leader in environmental stewardship and education.

NCUT's proactive measures in training certified experts and conducting greenhouse gas and product carbon footprint inventories demonstrate a strong commitment to sustainability and environmental responsibility. These efforts are crucial in helping Taiwanese enterprises navigate the complexities of global environmental standards, ultimately fostering a greener, more sustainable future.

NCUT Department of Chemical Engineering: International Collaboration and Research Excellence

Department of Chemical Engineering

The Department of Chemical Materials at National Chin-Yi University of Technology (NCUT) is dedicated to fostering international collaboration to enhance research and development in innovative technologies. By engaging in exchanges, visits, collaborative research, and joint publications with institutions in Canada, India, Poland, and other countries, the department promotes the cross-border exchange of ideas and scientific advancements.

International Collaboration and Achievements

Collaborative Activities:

1. Exchanges and Visits:

Faculty and students from the department participate in international exchange programs and visits to partner institutions. These interactions provide valuable opportunities to share knowledge, learn from global peers, and stay abreast of the latest developments in the field of chemical materials.

2. Collaborative Research:



The department actively engages in collaborative research projects with international researchers. These projects focus on addressing global challenges and developing cutting-edge technologies in chemical materials science.

3. Joint Publications:

From 2021 to July 2023, the department has successfully published 11 papers in collaboration with researchers from Canada, India, Poland, and other countries. These publications are a testament to the fruitful international partnerships and the high-quality research output of the department.

Focus Areas of Research

The collaborative research efforts span a wide range of topics within the field of chemical materials, including but not limited to:

Nanomaterials and Nanotechnology: Developing advanced nanomaterials for applications in electronics, energy storage, and biomedical fields.

Polymer Science: Innovating new polymer materials with enhanced properties for industrial and consumer applications.

Green Chemistry: Promoting sustainable and environmentally friendly chemical processes and materials.

Materials for Energy: Researching materials for renewable energy technologies, such as solar cells and batteries.

Benefits of International Collaboration

Exchange of Ideas: International collaboration brings together diverse perspectives and expertise, fostering innovative solutions to complex problems.

Access to Advanced Resources: Partnering with global institutions provides access to cutting-edge research facilities and technologies.

Enhanced Research Quality: Joint research efforts often lead to higher-quality publications and increased visibility in the scientific community.

Professional Development: Faculty and students benefit from the professional growth opportunities that come with working in international teams and participating in global scientific networks.

The Department of Chemical Materials at NCUT continues to seek **new international partnerships and expand its collaborative research initiatives**. By leveraging these global connections, the department aims to:

- **Increase Research Output:** Publish more high-impact papers in leading scientific journals.
- **Secure Funding:** Obtain international research grants and funding to support innovative projects.
- **Develop Technologies:** Advance the development of new materials and technologies with real-world applications.



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- **Enhance Education:** Provide students with a global perspective and prepare them for successful careers in the international scientific community.

The Department of Chemical Materials at NCUT is committed to advancing the frontiers of chemical materials science through robust international collaboration. By partnering with researchers from Canada, India, Poland, and beyond, the department not only enhances its research capabilities but also contributes to the global scientific community. These efforts ensure that NCUT remains at the forefront of innovation and development in chemical materials technology.

Promote collaboration between multinational researchers to publish papers

Collaborators	Year	Journal	Paper Topic
Canadian Professor	2023	Applied Materials Today	Effect of Ag-doping strategies on the Lewis acid/base behavior of mesoporous TiO ₂ photocatalyst and its performance in CO ₂ photoreduction
	2023	Materials Science and Engineering: B	High performance UV-LED activated gas sensors based on ordered carbon mesoporous materials loaded with ZnO nanoparticles
	2021	Applied Materials Today	Review and prospects of microporous zeolite catalysts for CO ₂ photoreduction
	2021	Journal of Materials Chemistry A	Ordered mesoporous photocatalysts for CO ₂ photoreduction
Indian postdoctoral researcher	2023	Materials Chemistry and Physics	Development of a polyaniline/CMK-3/hydroquinone composite supercapacitor system
	2023	Journal of Environmental Chemical Engineering	Nickel molybdate/cobalt molybdate nanoflakes by one-pot synthesis approach for electrochemical detection of antipsychotic drug chlorpromazine in biological and environmental samples
India and Poland University researchers	2023	Heliyon	Quantum computational investigation into structural, spectroscopic, topological and electronic properties of L-histidinium-L-tartrate hemihydrate: Nonlinear optical organic single crystal

	2023	Journal of the Indian Chemical Society	Conductivity measurement and dielectric, impedance and modulus spectroscopic studies on bis (P-nitrophenol) melaminium monohydrate
	2022	Catalysts	Hydrothermal Synthesis of CuO/RuO ₂ /MWCNT Nanocomposites with Morphological Variants for High Efficient Supercapacitors
	2022	Heliyon	DFT, hirshfeld and molecular docking studies of a hybrid compound - 2,4-Diamino-6-methyl-1,3,5-triazin-1-ium hydrogen oxalate as a promising anti -breast cancer agent
	2022	Journal of Molecular Structure	Structural, vibrational characterization and DFT calculations of urea: DL-malic acid (1:1)-co-crystal