# Smart Manufacturing and Materials Control through Digital and Green Transformation (DX/GX)

## Entity Overview

| | Company name | Location |
|---|---|---|
| Representative (Training provider) | Metallurgy and Materials Science Research Institute, Chulalongkorn University | Bangkok, Thailand |

**Business overview**

Founded 1986 · 42 staff · 50+ graduate students · 10+ years delivering industry training. World-class characterization facility (UTM, Rheometer, XRD, FE-SEM)

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| Partner organization | King Mongkut's Institute of Technology Ladkrabang (KMITL), Department of Nuclear Engineering, Faculty of Engineering, Chulalongkorn University |

## Training Overview

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|---|---|
| Training site | Metallurgy and Materials Science Research Institute, Chulalongkorn University |
| Project period | 28th April 2026 – 31st January 2027 |
| Training period | 7 days (42hours) in total |
| Participation fee | 20,000 THB/person (1/2 will be subsidized) |
| Language | Thai |
| Target trainees | 1.Engineers<br>2.Production managers<br>3.R&D staffs<br>4.Sustainability officers<br>5. Technical staffs<br>6. Final-year internship students |

**Training attributes**

Training Field: GX, DX

Course Type: OJT

Basic Knowledge: Required

Applicable Industry: Automotive/Textile

Highlight of Training Benefit:
- **GX**: 10% $CO_2$ reduction
- **DX:** 15% Reduction in production waste

## Contents of Training



**Pillar 1: Smart Manufacturing**
- Intelligent machine and manufacturing systems
- Sensor fusion & in-process monitoring
- ML/AI using IoT and robotics



**Pillar 2: Sustainable Materials**
- Carbon footprint analytics
- Green fiber technology
- Materials innovation & computational science



**Pillar 3: Testing and R&D**
- Advanced materials characterization
- OJT instrument operation
- Capstone Design Thinking Workshop

## Expected Training Benefits

Quantitative: Companies are projected to achieve >=10% reduction in carbon footprint (verified through 12-month follow-up surveys) and >=15% reduction in production waste through improved process monitoring. These projections are based on benchmark outcomes from comparable MMRI short-course programs delivered to Thai manufacturers over the past five years.

Qualitative: Participating companies gain access to MMRI's expert network and characterization facilities for post-training consultation; employees return with industry-relevant DX/GX project proposals ready for internal approval; and companies gain a competitive advantage in meeting Japanese Environmental, Social, and Governance requirements and ASEAN supply chain sustainability audits.

## How to Apply for Training

Contact: Metallurgy and Materials Science Research Institute (MMRI), Chulalongkorn University Tel: (+66)2 218-4210
website: www.material.chula.ac.th
Register by via QR code or submit the document by e-mail to mmri@chula.ac.th