Future Learn

Issued 26th February 2025. futurelearn.com/certificates/dctz2ft

Certificate of Achievement

SOURAV GUHA

has completed the following course:

E-WASTE AND BATTERY RECYCLING: TECHNOLOGY, DESIGN, AND CHALLENGES

EIT RAWMATERIALS, CHIMIE PARISTECH – PSL, NORWEGIAN UNIVERSITY OF SCIENCE AND TECHNOLOGY (NTNU) AND CHALMERS UNIVERSITY OF TECHNOLOGY

This online course introduced every element of waste electrical and electronic (WEEE) recycling, from recycling lithium batteries to recovering plastics and trace metals. Current and emerging technologies were studied, with an emphasis on principles of environmental design and the circular economy.

4 weeks, 5 hours per week

Dr Didier Zimmermann
Director Education and Innovation
EIT RawMaterials

Philippe Barboux
Professeur des Universités
Chimie ParisTech

eit RawMaterials ACADEMY
Co-funded by the European Union

Chimie Paris ParisTech | PSL

NTNU Norwegian University of Science and Technology

CHALMERS

The person named on this certificate has completed the activities in the attached transcript. For more information about Certificates of Achievement and the effort required to become eligible, visit futurelearn.com/proof-of-learning/certificate-of-achievement.

This certificate represents proof of learning. It is not a formal qualification, degree, or part of a degree.

TRANSCRIPT

SOURAV GUHA

has completed the following course:

89%
OVERALL SCORE

E-WASTE AND BATTERY RECYCLING: TECHNOLOGY, DESIGN, AND CHALLENGES

EIT RAWMATERIALS, CHIMIE PARISTECH – PSL, NORWEGIAN UNIVERSITY OF SCIENCE AND TECHNOLOGY (NTNU) AND CHALMERS UNIVERSITY OF TECHNOLOGY

This online course introduced every element of waste electrical and electronic (WEEE) recycling, from recycling lithium batteries to recovering plastics and trace metals. Current and emerging technologies were studied, with an emphasis on principles of environmental design and the circular economy.

STUDY REQUIREMENT

4 weeks, 5 hours per week

LEARNING OUTCOMES

- Identify the valuable chemicals that can be recycled in batteries and waste of electronic and electrical equipment
- Compare the different recycling methods: mechanical, pyrometallurgical and hydrometallurgy routes
- Calculate the energy cost of some recycling processes using simple thermodynamics
- Design and optimise new processes based on the combination of well proven techniques with new innovative solutions
- Assess the chemical risks and harmful emissions to the environment during the process of recycling WEEE
- Develop awareness of the necessity to recycle but also of the compromises to be made for efficient and safe recycling

SYLLABUS

This dynamic course will look at:

- Waste from electrical and electronic equipment (WEEE), chemical content, and lithium batteries
- Thermal recycling methods (pyrometallurgy)
- Solution chemistry (hydrometallurgy) recycling
- State-of-the-art industrial recycling
- Emergent recycling methods
- Risks, the environment, and responsible recycling