Decreto Rettorale n. */2022

*n. della registrazione di protocollo riportato nei metadati del sistema di protocollo informatico Titulus

Oggetto: **Concorso pubblico, per titoli ed esami, per l'ammissione al Corso di dottorato di ricerca in Sustainable Development and Climate change – XXXVIII ciclo – A.A. 2022-2023 – Riapertura bando - INTEGRAZIONE**

Pubblicato all'Albo della Scuola

Area: Area Didattica, Qualità e Servizi agli allievi

IL RETTORE

RICHIAMATO il Decreto rettorale n. 305/2022 del 28 ottobre 2022 di riapertura del bando di concorso per l'ammissione al Corso di dottorato nazionale in Sustainable Development and Climate change – XXXVIII ciclo – A.A. 2022-2023;

CONSIDERATI la convenzione stipulata tra la Scuola IUSS e l'Università degli studi di Siena ed il relativo Addendum finalizzati all'attivazione e al funzionamento del corso di Dottorato Nazionale in Sustainable Development and Climate change - ciclo XXXVIII;

RITENUTO di dover integrare il bando di concorso in oggetto;

DECRETA

L'integrazione del bando di concorso per l'ammissione al Corso di Dottorato Nazionale in Sustainable Development and Climate change - XXXVIII ciclo - A.A. 2022/2023 di **n. 1** borsa di studio, come da Research Programme allegato.

Pavia, data del protocollo

IL RETTORE

Prof. Riccardo Pietrabissa

(Documento firmato digitalmente ai sensi del D.Lgs 82/2005)

Riccardo
Pietrabissa
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GMT+01:00

PhD SDC
SUSTAINABLE DEVELOPMENT
AND CLIMATE CHANGE

Scholarship code

CU3.37

Curriculum: 3. Technology and Territory

Eco-design of materials and technologies for sustainable energy production and storage

Reference Person: Sinicropi Adalgisa (adalgisa.sinicropi@unisi.it)

Host University/Institute: University of Siena

Research Keywords:	Life Cycle Sustainability Assessment Renewable energy sources Energy production and storage
Reference ERCs:	PE4_18 Environment chemistry PE4_1 Physical chemistry PE8_11 Environmental engineering, e.G. Sustainable design, waste and water treatment, recycling, regeneration or recovery of compounds, carbon capture & storage
Reference SDGs:	GOAL 7: Affordable and Clean Energy, GOAL 9: Industry, Innovation and Infrastructure, GOAL 11: Sustainable Cities and Communities

Description of the research topic

The PhD project aims to develop an integrated approach based on the life cycle thinking tools to support the eco-design of materials and technologies for sustainable solar systems. Technologies exploiting renewable energy sources and for energy storage are not always intrinsically sustainable, especially if they are not designed based on energy and resource efficiency criteria. Their life cycle footprint is primarily determined by the manufacturing and end-of-life (EoL) phases, as the impacts generated during the operational phase can be reasonably considered negligible. In order to achieve more sustainable devices, we need to conceive a system value chain in compliance with the circular economy principles. To this aim, a combination of life cycle assessment and life cycle costing will allow for a cross-analysis of an economic and environmental optimum considering their costs and performances. These will lead to new generation solar systems characterized by high efficiency, stability and with high environmental added value.

Research team and environment

The project will be carried out at the Research on Renewable Energy and Sustainability Laboratory (R2ES Lab, www.R2eslab.Com) at the Department of Biotechnology, Chemistry and Pharmacy of the University of Siena, under the supervision of Prof. A. Sinicropi and Prof.

M.L. Parisi. The laboratory has wide international scientific experience in various fields of physical and organic chemistry, especially for environmental applications.

Suggested skills for this research topic

The candidate should have a scientific/technical background and a strong interest in energy issues. Candidates should have a Master degree in a relevant science subject or in engineering. The candidate would ideally have experience and technical competence in the use of methodologies for the sustainability assessment and resource efficiency analysis of renewable energy.

To be successful in this role, he/she should:

- Have good analytical and quantitative skills to analyze information, manage large amounts of data and interpret results;

- Speak and write clearly in English;

- Have good interpersonal and communication attitudes.