

**Annual REPORT PhD IN MATERIALS FOR SUSTAINABLE DEVELOPMENT  
(formerly MATERIALS FOR HEALTH, ENVIRONMENT AND ENERGY)  
Academic year 2022/2023**

### **38<sup>th</sup> Cycle**

In the academic year 2022/2023, 12 students were enrolled in the first year of the Doctoral Course, 3 co-financed by companies using the resources of Ministerial Decree 118 or PNRR (next generation EU). Two students come from abroad.

The students' activity was mainly oriented towards consolidating their training and acquiring the skills necessary for their specific research project.

The training activities were implemented with seminar activities (23 seminars) held at the reference Department or other University Departments.

Some training activities were carried out at national and international research infrastructures.

Despite the important teaching load of the first year, the students participated in 2 national conferences, 3 international conferences (with 2 oral presentations) and produced one indexed publication.

All students presented the reports on their activities to the Faculty Committee and, on the basis of the reports, the oral presentations and the positive evaluation of the Supervisors, were admitted to the following year.

### **37<sup>th</sup> Cycle**

In the academic year 2022/2023, 11 students were enrolled in the second year of the Doctoral Course, 3 co-financed with the resources of Ministerial Decree 1061. Two students came from abroad.

The activity of the second-year students was oriented towards the development of their specific research project, the further consolidation of their training and the writing of scientific works.

The training activities were implemented with seminar activities (23 seminars) held at the reference Department or other University Departments.

The scientific production was quite satisfactory: the students' scientific activity was in fact presented in 5 national conferences/workshops, 6 international conferences/workshops and produced 10 indexed publications. Some students also participated in two international summer schools.

All students presented the reports on their activities to the Faculty Committee and, on the basis of the reports, the oral presentations, and the positive evaluation of the Supervisors, were admitted to the following year.

### **36<sup>th</sup> Cycle**

In the academic year 2022/2023, 14 students were enrolled in the third year of the Doctoral Course, one co-financed by a company. Four came from abroad.

The activity of the third-year students was oriented towards the conclusion of their specific research project and the writing of the theses and of scientific papers. Some students also participated in research project presentation and reporting activities.

The training activities were essentially oriented towards seminar activities (23 seminars) held at the reference Department or other University Departments.

Four students conducted part of their scientific activity abroad (Spain, Switzerland, UK)

The overall scientific production is quite extensive: overall the students' scientific activity has been presented in 10 national Conferences/Workshops, 23 international Conferences/Workshops and has produced 24 indexed publications. Two students also participated in two international summer schools.

Further demonstration of the quality of the research carried out are the four awards received by the students: Asia Grattagliano and co-authors (best poster "Developing Water Soluble Organic Redox Couples for Redox Flow Batteries", "17th European Congress and Exhibition on Advanced Materials and Processes – FEMS EUROMAT", Frankfurt am Main, Germany), Saveria Loberto (Award for Honorable Mention in Oral Communication "Evaluation of the anchorage loss during maxillary molars distalization in Class II permanent dentition patients treated by Invisalign system" 53th SIDO International Congress. Florence, 13-16 October

2022), Anna Paola Panunzi (BEST POSTER AWARD ChemElectroChem, DAYS OF ITALIAN ELECTROCHEMISTRY (GEI) 2022, Orvieto and POSTER AWARD announced by the MM.FF.NN Sciences Macroarea of the University). All students presented the reports on their activities to the Faculty Committee and, on the basis of the reports, the oral presentations, and the positive evaluation of the Supervisors, were admitted to the to the discussion of their thesis.

Overall, in the three-year period of their course, the 36<sup>th</sup> cycle doctoral students produced 38 publications in indexed journals, with a very satisfactory average of 2.7 publications per doctoral student. The theses were all positively evaluated by two external reviewers. Final exams are still underway.

To attract the best students, starting from the 39<sup>th</sup> Cycle, the University scholarships awarded have been increased by €7000/year from the MUR DSTC Department of Excellence 2023-2027 funding attributed to the Department of Chemical Sciences and Technologies, reference Department for the Course.