Corso di Nanostrutture a base di Carbonio

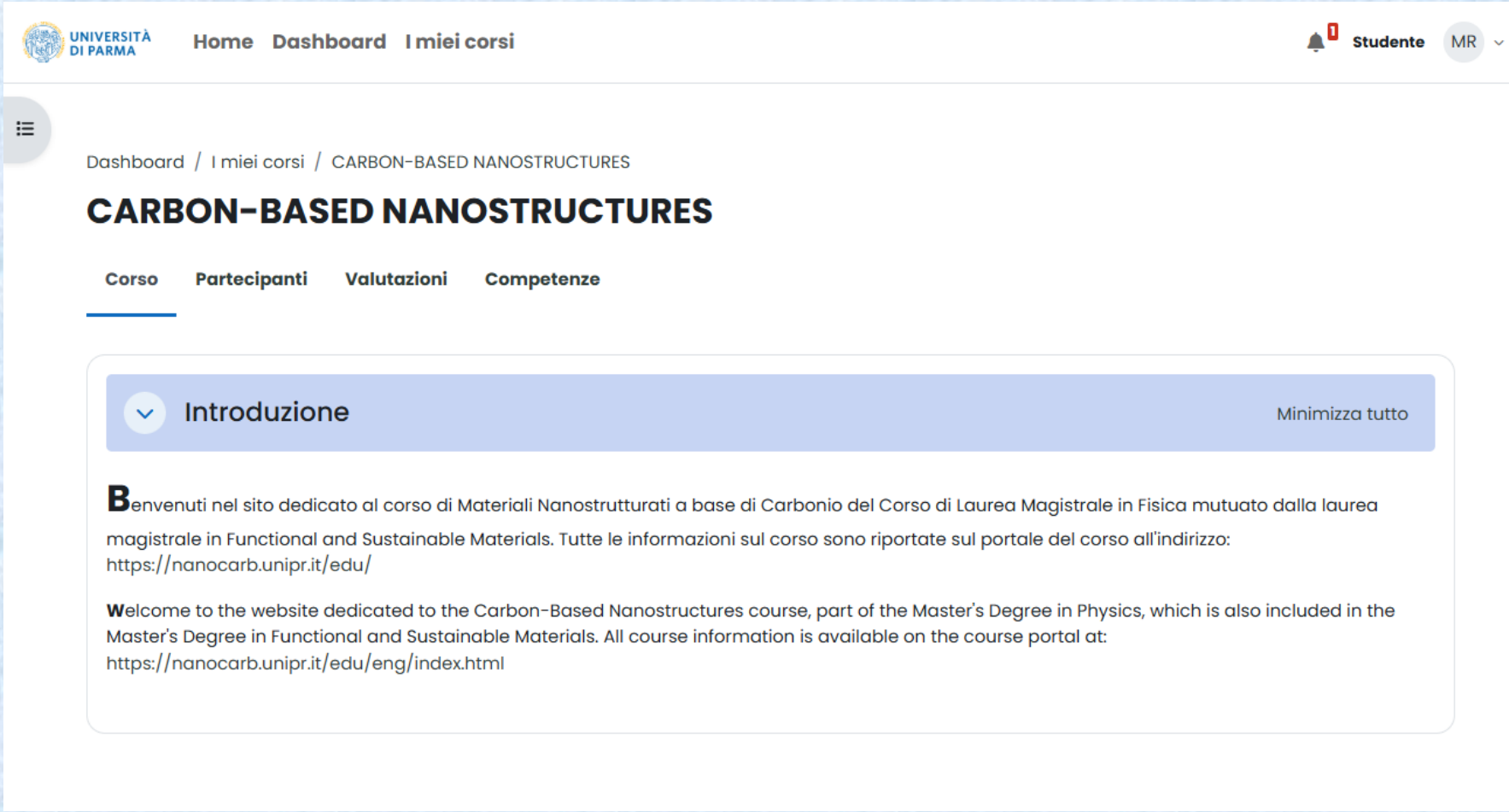
Carbon Nanostructures Course

Academic Year 2026-2027

Presentation

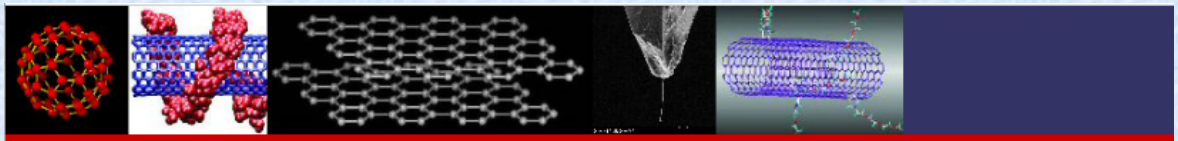
	Monday	Tuesday	Wednesday	Thursday	Friday
8.30-10.30					
10.30-12.30		10.30-12.00 Kirk room		10.30-12.00 Rutherford room	
14.30-16.30					
16.30-18.30					

Elly web page



https://elly2026.didattica.unipr.it/course/view.php?id=263

http://nanocarb.unipr.it/edu/



MATERIALI NANOSTRUTTURATI DI CARBONIO

English version

Università degli Studi di Parma

Corso di Laurea Magistrale in Fisica

Dottorato in Scienza e Tecnologia dei Materiali

Dottorato in Fisica

Insegnamento di Materiali Nanostrutturati di Carbonio (6 CFU) - Anno Accademico 2026-2027

Docente: Prof. Mauro Riccò (tel. 905217, e-mail: mauro.ricco@unipr.it)
Supporto didattico: Prof. Daniele Pontiroli (tel. 905236, e-mail: daniele.pontiroli@unipr.it)
Dr. Giacomo Magnani (tel. 906067, e-mail: giacomo.magnani@unipr.it)

AVVISI:

Benvenuti nel sito dedicato al corso di Materiali Nanostrutturati a base di Carbonio del Corso di Laurea Magistrale in Fisica.

Data la natura interdisciplinare dell'argomento, questo corso è solitamente frequentato anche da studenti dei C.d.L. in Chimica, Scienze della Terra, Ingegneria, e dagli studenti di dottorato in Scienza dei Materiali e Fisica.

Dall'a.a. 2021/22 il corso verrà erogato in modalità "in presenza". L'aula dedicata al corso non permette ne la registrazione delle lezioni ne la loro trasmissione da remoto, quindi gli studenti assenti per malattia potranno chiedere la pubblicazione della registrazione delle lezioni corrispondenti registrate nel 2021/22 nella pagina Elly del corso.

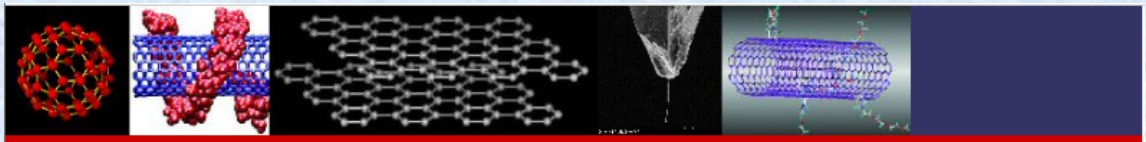
In questo sito troverete il programma degli studi, le diapositive delle lezioni in formato pdf, alcuni link interessanti, ecc.

Obiettivi del corso

Il corso si occupa principalmente di fornire le conoscenze di base sui materiali nanostrutturati costituiti unicamente di carbonio quali: Fullereni, Grafeni, Nanotubi, Nanografiti, Biochar e Onions. Lo studio di questi materiali costituisce un campo di frontiera della moderna ricerca e la conoscenza, oggi raggiunta, di questi sistemi suggerisce che possano costituire la base di innumerevoli future applicazioni tecnologiche. La loro conoscenza quindi dovrebbe rappresentare un'importante base per la formazione del futuro fisico che si occupa di materia condensata ma non solo.....

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http://nanocarb.unipr.it/edu/eng



CARBON BASED NANOSTRUCTURES

Italian version

Parma University

Master Course in Functional and Sustainable Materials

PhD in Materials Science and Technology

PhD in Physics

Carbon-based Nanostructures Course (6 CFU) - Year 2026-2027

Teacher: Prof. Mauro Riccò (tel. 905217, e-mail: mauro.ricco@unipr.it)
Teaching support: Prof. Daniele Pontiroli (tel. 905236, e-mail: daniele.pontiroli@unipr.it)
Prof. Giacomo Magnani (tel. 905282, e-mail: giacomo.magnani@unipr.it)

NEWS:

Welcome to the website dedicated to the Carbon-based Nanostructures course of the Master's Degree in Functional and Sustainable Materials.

Given the interdisciplinary nature of the topic, this course is usually also attended by students of the Master Degree in Chemistry, Earth Sciences, Engineering, and by PhD students in Materials Science and Physics.

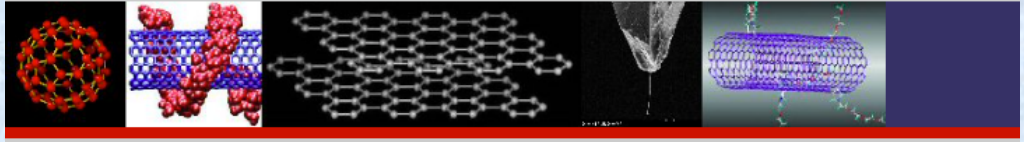
The classroom in which the course takes place does not allow the recording of the lessons, therefore students absent due to illness or abroad waiting for visa, can find the copy of the slides used in the lessons on this site at the "slides" page.

On this site you will find the program of the course, the slides of the lessons in pdf format, some interesting links, etc.

Educational objectives of the course

The course is mainly focused on providing basic knowledge of nanostructured materials made solely of carbon such as: Fullerenes, Graphenes, Nanotubes, Nanographites, Biochar and Onions. The study of these materials constitutes a frontier field of modern research and the knowledge, achieved today, of these systems suggests that they may constitute the basis of a manifold of future technological applications. Their knowledge should therefore represent an important basis for the training of the future physicist/chemist/material scientist who deals with condensed matter but not only.....

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CARBON BASED NANOSTRUCTURES

Program of the Course

Carbon-based Nanostructures Course
Year 2025-2026

Graphite	Structure Electronic structure Transport Magnetic properties Sinthesis Difects
Nanographites and intercalated graphites	Structure Preparation Transport and electronic properties Superconductivity Applications
Graphene	Structure Preparation Electronic properties and transport Quantum electrodynamics and graphene Applications
Fullerenes	Structure Electronic structure Fullerites Superconductivity Magnetism (TDAE-C60) Study with μSR
Nanotubes	Structure Electronic structure Transport properties Applications
Chemistry and magnetic properties of Carbon Nanostructures	Fullerenes derivatives Self-Assembly Chemistry of Nanotubes Ferromagnetism of Carbon
Biochar	Extraction Structure Activation Properties of activated carbons Hard carbons

Slides used during lessons

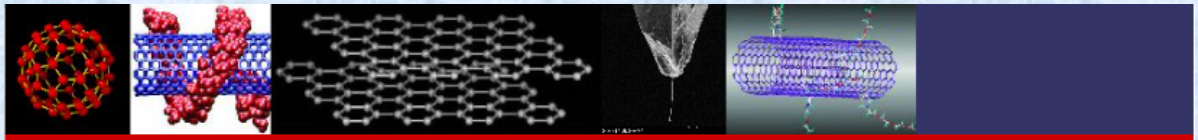
Aggiornato il: 02.03.2020 Webmaster: M. Riccò

Slides and (past) recordings of Carbon Nanostructures Course

Master Course in Functional and Sustainable Materials
Master Course in Physics
PhD in Materials Science and Technology
PhD in Physics

Prof. Mauro Riccò

To go back use the specific browser button or click here.



CARBON BASED NANOSTRUCTURES

Master course in Physics

Course of Carbon Nanostructures - Year 2026-2027

Rules

Telematic references

- Elly website of the course.

Lessons timetable

- Tuesday: from 10:30 to 12:00, Kirk room
- Thursday: from 10:30 to 12:00, Rutherford room.

Lessons diary

Students reception

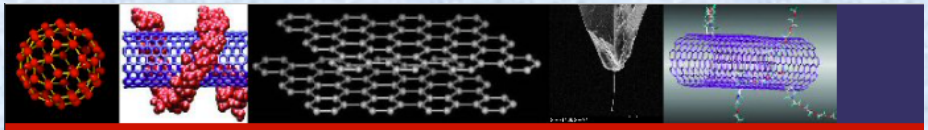
- Tuesday: from 14:30 to 16:30.

Exams calendar year 2023-2024 (to be updated)

Nr.	Date	Time	Exam type
1	05/02/2024	14.30	Oral
2	19/02/2024	14.30	Oral
3	24/06/2024	14.30	Oral
4	15/07/2024	14.30	Oral
5	29/07/2024	14.30	Oral
6	26/08/2024	14.30	Oral
7	09/09/2024	14.30	Oral

Suggested textbooks

- T. Enoki, M. Suzuki, M. Endo, *Graphite Intercalation Compounds and Applications*, Oxford Univ. Press, 2003.
- P.J.F. Harris, *Carbon Nanotubes and Related Structures*, Cambridge Univ. Press, 1999.
- M. Meyyappan, *Carbon Nanotubes Science and Applications*, CRC Press, 2005.



MATERIALI NANOSTRUTTURATI DI CARBONIO

Università degli Studi di Parma

Corso di Laurea Magistrale in Fisica

Dottorato in Scienza e Tecnologia dei Materiali

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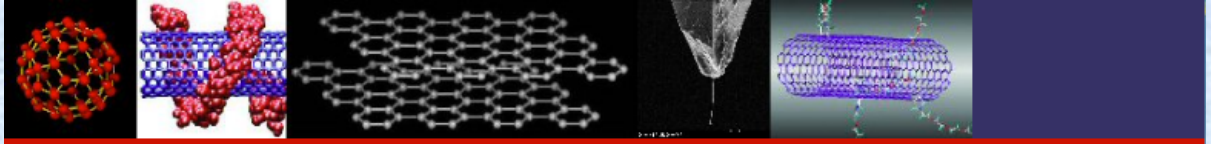
Insegnamento di Materiali Nanostrutturati di Carbonio - Anno Accademico 2022-2023

Legenda: ## = Voto proposto | AP = Esame Approvato | NS = Esame non superato

Voto:	Voto proposto. Da verbalizzare in una data d'esame (vedi calendario appelli) al quale lo studente si dovrà iscrivere su ESSE3. Lo studente può accettare il voto proposto comunicandolo via mail al docente oppure optare per una prova orale, sempre mediante comunicazione via email al docente. In quest'ultimo caso, la valutazione finale consisterà nella media delle due valutazioni ottenute.
Approvato:	L'esame frequentato dallo studente di Dottorato risulta superato. Viene contestualmente inviata comunicazione al relativo coordinatore del Dottorato per la registrazione dei crediti conseguiti.
Non Superato:	Lo studente non risulta aver superato l'esame mediante le presentazioni fatte durante il corso, dovrà sostenere una prova orale che verte su tutto il programma prenotandosi sul sito ESSE3.

Matricola	Presenze (/24)	Voto proposto
354125	24	30 e lode
353234	0	NS
348448	22	25
353776	15	27
341151	17	AP
342611	22	AP
342576	19	AP

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CARBON BASED NANOSTRUCTURES

Master Course in Functional and Sustainable Materials

Master Course in Physics

Carbon Nanostructures Course - Year 2024-2025

Links

The following links are used to better illustrate the concepts covered in the lessons and to delve deeper into some topics that are outside the scope of the program covered.

Nanocarbon Laboratory
Official website of the Nanocarbon Laboratory

Aggiornato il: 27.12.2006 Webmaster: M. Riccò

http://nanocarb.unipr.it/



Carbon Nanostructure Course

Main topics :

Carbon, its allotropic states and graphite ..... Mauro Riccò

Graphenes..... Mauro Riccò

Graphite and Intercalated Graphite (structure, preparation, electronic and transport properties, superconductivity, applications)……Daniele Pontiroli

Fullerenes (structure, electronic structure, fullerides, superconductivity, magnetism: TDAE-C_{60}, μSR)..... Mauro Riccò

Nanotubes (structure, electronic structure, transport properties, applications) .....Mauro Riccò

Biochar (structure, electronic structure, properties, applications) .....Mauro Riccò

Complementary topics

Hydrogen storage in CNs……

Magnetism in carbon……..

Synthesis of nanotubes ……

Synthesis of graphenes……

Other CNs (peapods, nanodiamonds, nanofoam, onions, nanohorns)…….

Other CNs (polyynes, cumulenes)……..

Nanoelectronics……(1 & 2?)

Chemistry and CNs.....

Endohedral and polymeric fullerenes……

Applications of CNs: field emission and sensors……

CNs as ionic conductors……

CNs as components of ion batteries……

CNs biomedical applications……

CNs toxycology……..

Biological effects od CNs……

Superconductivity of fullerites……

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