



# Miles Martinati

## PRESENTAZIONE

**Profile** Experimental physicist in the field of nanostructures with a background in condensed matter physics, optical spectroscopy and time-resolved pump-probe spectroscopy.

**Keywords** Physics, carbon nanotubes (CNTs), graphene, graphene nanoribbons (GNRs), linear carbon chains (LCCs), Raman spectroscopy, stimulated Raman spectroscopy, photo-luminescence excitation (PLE) spectroscopy, transient absorption, impulsive vibrational spectroscopy.

**Research interest:** time-resolved pump-probe Raman spectroscopy (femtosecond stimulated Raman spectroscopy, impulsive vibrational spectroscopy) applied to investigate the ultrafast optical properties of nanostructures (carbon nanotubes, graphene, carbon wires), biomolecules (carotenoids, nucleobases) and organic compounds (stilbenes, organic dyes).

## ESPERIENZA LAVORATIVA

01/11/2021 – ATTUALE ROMA, Italia

**POSTDOC** SAPIENZA UNIVERSITÀ DI ROMA

**Gruppo di ricerca** Femtoscopy group, Physics department

**Supervisor** Prof. dr. Tullio Scopigno

### Scholarships/Projects

Nov 2021 – Oct 2022 Assegno di ricerca Cat. B Tip. I, Tullio copigno. Titolo della Ricerca: Spettroscopia Raman non-lineare risolta in tempo.

Nov 2022 – Oct 2023 Assegno di ricerca Cat. A Tip. I, Dipartimento di Fisica. Tipo di concorso: self-funded grant upon a competitive selection. Durata: 1 anno. Finanziamento: 19.367,00€. Titolo del progetto di ricerca: Impulsive and stimulated Raman spectroscopy of linear carbon chains encapsulated inside carbon nanotubes.

Progetti per Avvio alla Ricerca Tipo 2 - Titolo progetto di ricerca - Realization of a transient absorption pump-pump-probe setup for investigating triplet exciton states in carbon nanotubes. Ruolo: principal investigator (PI). Finanziamento: 2000 €.

### Collaborations

Universiteit Antwerpen, Anversa, Belgio. Prof. dr. Sofie Cambrè.

Topic: IVS on dye molecules encapsulated inside carbon nanotubes.

Université Claude Bernard Lyon 1, Lione, Francia. Dr. Salomé Forel.

Hebrew University of Jerusalem, Jerusalem, Israel. Prof. dr. Sanford Rhuman.

Topic: IVS on permanganate-doped Potassium perchlorate crystals. Paper in preparation.

## ISTRUZIONE E FORMAZIONE

16/01/2017 – 31/05/2021 Anversa, Belgio

**PHD IN FISICA** Universiteit Antwerpen

**Gruppo di ricerca** NANOrOPT group, Faculty of Science, Physics department

**Supervisors** Prof. dr. Sofie Cambré, Prof. dr. Wim Wenseleers

### Scholarships

Jan 2017 - Oct 2017 (9 months) funded by the European Research Council through an ERC Starting Grant No. 679841 (ORDERin1D) "Order in one dimension: Functional hybrids of chirality-sorted carbon nanotubes", granted to prof. Dr. Sofie Cambré.

Oct 2017 - May 2021 (3.5 years) PhD grant (BOF-DOCPRO4) "Diameter-dependent phase transitions in one-dimension arrays of molecules confined inside single-wall carbon nanotubes" funded by the University of Antwerp Research Fund.

## Collaborations

Sun Yat-sen University, Guangdong, P. R. China. Prof. dr. Lei Shi. Synthesis of 1D nanostructures.  
University of Vienna, Vienna, Austria. Prof. dr. Hans Kuzmany. Solid state physics, spectroscopy.  
University of Arizona, Tucson, Arizona. Prof. dr. Jean-Luc Brédas. Quantum chemistry.  
ELTE Eötvös Loránd University, Budapest, Hungary. Prof. dr. Jenő Kürti. Quantum chemistry of CNTs.  
Ulm University, Ulm, Germany. Prof. Dr. Ute Kaiser. Transmission electron microscopy (TEM).  
Nanotube Research Centre, Tsukuba, Japan. Prof. dr. Takeshi Saito. CNT synthesis.

## Summer school

Summer School on Low Dimensional Systems, presso l'Università di Montpellier, Montpellier, Francia (22-29 Giugno 2019);

**Campo di studio** Nanotubi in carbonio, carbon wires, graphene nanoribbons, spettroscopia Raman, fluorescenza, assorbimento.

**Tesi** Optical spectroscopy of one-dimensional carbon nanostructures encapsulated inside carbon nanotubes.

01/12/2013 – 14/07/2016 Roma, Italia

**LAUREA MAGISTRALE IN CONDENSED MATTER PHYSICS** Sapienza, Università di Roma

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**Gruppo di ricerca** Femtoscopy group, Physics department, La Sapienza.

## Collaborations

Istituto Italiano di Tecnologia, Rome, Italy.

Cambridge Graphene Centre, Cambridge, UK. IFN-CNR, Milano, Italy.

**Campo di studio** Fisica della materia condensata | **Voto finale** 110/110 con lode |

**Tesi** Phonon anomalies in graphene revealed by pulsed Raman spectroscopy

01/09/2010 – 01/12/2013 Roma, Italia

**LAUREA TRIENNALE IN FISICA** Sapienza, Università di Roma

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**Voto finale** 103/110

01/09/2005 – 10/07/2010 Roma, Italia

**LICEO SCIENTIFICO** Liceo "Virgilio"

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## COMPETENZE LINGUISTICHE

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Lingua madre: **ITALIANO**

Altre lingue:

	COMPRESIONE		ESPRESSIONE ORALE		SCRITTURA
	Ascolto	Lettura	Produzione orale	Interazione orale	
<b>INGLESE</b>	C1	C1	B2	B2	C1
<b>FRANCESE</b>	A1	A1	A1	A1	A1
<b>OLANDESE</b>	A2	A2	A2	A2	A2

*Livelli: A1 e A2: Livello elementare B1 e B2: Livello intermedio C1 e C2: Livello avanzato*

## ULTERIORI INFORMAZIONI

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### PUBBLICAZIONI

[Raman spectroscopy of graphene under ultrafast laser excitation](#) – 2018

C. Ferrante, A. Virga, L. Benfatto, M. Martinati, D. De Fazio, U. Sassi, C. Fasolato, A. K. Ott, P. Postorino, D. Yoon, G. Cerullo, F. Mauri, A. C. Ferrari, T. Scopigno.

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Nat Commun 9, 308 (2018).

**[Well-defined sub-nanometer graphene ribbons synthesized inside carbon nanotubes](#)** – 2021

H. Kuzmany, L. Shi, M. Martinati, S. Cambré, W. Wenseleers, J. Kürti, J. Koltai, G. Kukucska, K. Cao, U. Kaiser, T. Saito, and T. Pichler

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Carbon, vol. 171, pp. 221–229, (2021).

**[Electronic structure of confined carbyne from joint wavelength-dependent resonant Raman spectroscopy and density functional theory investigations](#)**

– 2022

M. Martinati, L. Shi, T. Pichler, P. Saied, V. Coropceanu, J.L. Brédas, W. Wenseleers and S. Cambré

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Carbon vol. 189, pp. 276-283, (2022).

**[Stimulated Raman lineshapes in the large light-matter interaction limit](#)** – 2022

G. Batignani, G. Fumero, E. Mai, M. Martinati, and T. Scopigno

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Optical Materials: X, vol. 13, pag. 100134, (2022).

**[The role of the bile salt surfactant sodium deoxycholate in aqueous two-phase separation of single-wall carbon nanotubes revealed by systematic parameter variations](#)**

– 2022

J. Defiliet, M. Avramenko, M. Martinati, M. A. L. Carillo, D. Van der Elst, W. Wenseleers and S. Cambré

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Carbon, vol. 195, pp. 349-363, (2022).

**[Variations in bile salt surfactant structure allow tuning of the sorting of single-wall carbon nanotubes by aqueous two-phase extraction](#)**

– 2022

M. Avramenko, J. Defiliet, M.A. López Carrillo, M. Martinati, W. Wenseleers, Sofie Cambré

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Nanoscale, vol. 14, pp. 15484-15497 (2022).

## **CONFERENZE E SEMINARI**

08/05/2023 – 12/05/2023 – Porquerolles, France

**GDR-I HOWDI meeting** Contributed talk.

24/04/2022 – 28/04/2022 – San Sebastian, Spain

**ChemOnTubes2022: international meeting on chemistry of carbon nanotubes** Contributed talk.

07/09/2020 – 08/09/2020 – conferenza virtuale

**v-WNMO** Contributed talk.

21/07/2019 – 21/07/2019 – Wurzburg, Germania

**NT19** Poster presentation.

23/01/2019 – 23/01/2019 – Anversa, Belgio

**Research day Università di Anversa** Poster presentation.

20/06/2018 – 22/06/2018 – Parigi, Francia

**Lavoisier discussion Mol@CNT**

## **EXTRA CORSI**

### **Corsi di formazione**

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**Leadership & Teamwork** @ Antwerp Doctoral School. Nov 2019

**Optimizing Cooperation in International Environment** @ Cultural Quantum. May 2019

**Writing Academic Paper in English** @ Antwerp Doctoral School. Oct 2018

**Applied Communication** @ GEVAK-consulting. May 2017

**Project Management Foundation** @ Eureka Service. March 2015

**Microsoft Project Basic** @ Eureka Service. June 2015

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*Autorizzo il trattamento dei miei dati personali presenti nel CV ai sensi dell'art. 13 d. lgs. 30 giugno 2003 n. 196 - "Codice in materia di protezione dei dati personali" e dell'art. 13 GDPR 679/16 - "Regolamento europeo sulla protezione dei dati personali".*