Tommaso Venanzi - Scientific Curriculum Vitae

BORN — Rome, Italy, 14/11/1991

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RESEARCH INTERESTS

I am an experimental physicist and in the past years I have focused on the physics of **semiconductors** and their interaction with **terahertz** and infrared radiation.
I am highly interested in the application of fundamental research to opto-electronic technology. To this end, I have leveraged on several spectroscopic approaches, on plasmonics, on nano-fabrication, and on electrical probing of the samples.

MAIN EXPERIMENTAL TECHNIQUES

Steady-state spectroscopy

Raman, Photoluminescence, Fourier Transform Infrared spectoscopy , AFM-assisted nano-infrared spectroscopy: scattering SNOM, and AFM-IR

Time-resolved spectroscopy

Pump-probe and time-resolved photoluminescence (non-linear optics for light generation)

Transport measurements

Electrical measurements and photo-conductivity

Others

Low-temperature measurements, fabrication of 2D materials and van der Waals heterostructures, regular user of the infrared free-electron laser FELBE (HZDR)

EDUCATION

University of Rome Sapienza, Rome, Italy

Postdoctoral researcher — Nov 2020 till now

- Main goal: *Study of electron-phonon interaction in van der Waals heterostructures*
- Group leaders: Leonetta Baldassarre, Michele Ortolani

Helmholtz Zentrum Dresden Rossendorf and TU Dresden, Dresden, Germany

PhD in physics — Sept 2016 till Oct 2020

- Thesis title: *Optical and infrared properties of atomically thin semiconductors*
- Final mark: *Summa cum Laude*
- Supervisors: Harald Schneider, Manfred Helm

University of Rome Sapienza, Rome, Italy

Master degree in physics, condensed matter — May 2016

- Thesis title: *Near-field investigation of nanoantennas made of metallic Germanium*
- Final mark: *110/110*
- Supervisor: Michele Ortolani

The 5 most relevant publications	• L. Balaghi, S. Shan, I. Fotev, F. Moebus, R. Rana, **T. Venanzi**, R. Hübner, T. Mikolajick, H. Schneider, M. Helm, A. Pashkin, and E. Dimakis, "High electron mobility in strained GaAs nanowires", *Nature Communications* **12**, 6642 (2021). • **T. Venanzi**, M. Selig, S. Winnerl, A. Pashkin, A. Knorr, M. Helm, and H. Schneider, "Terahertz induced energy transfer from hot carriers to trions in a $MoSe_2$ monolayer", *ACS Photonics* **8**, 2931 (2021). • **T. Venanzi**, H. Arora, S. Winnerl, A. Pashkin, P. Chava, A. Patanè, Z. D. Kovalyuk, Z. R. Kudrynskyi, K. Watanabe, T. Taniguchi, A. Erbe, M. Helm, and H. Schneider, "Photoluminescence dynamics in few-layer InSe", *Physical Review Materials* **4**, 044001 (2020). • H. Arora, R. Dong, **T. Venanzi**, J. Zscharschuch, H. Schneider, M. Helm, X. Feng, E. Cánovas, and A. Erbe, "Demonstration of a broadband photodetector based on a two-dimensional metal–organic framework", *Advanced Materials* **32**(9), 1907063 (2020). • **T. Venanzi**, H. Arora, A. Erbe, A. Pashkin, S. Winnerl, M. Helm, and H. Schneider, "Exciton localization in $MoSe_2$ monolayers induced by adsorbed gas molecules", *Applied Physics Letters* **114**, 172106 (2019).
Citation Metrics	Citations: 142 (107) GScholar (ISI) h-index: 5 (GScholar/ISI)
International Conferences	• Keynote presentation at IRMMW-thz 2021 • Flatland 2019 • Terametanano 4 • Graphene 2018 • DPG meetings 2017, 2018, and 2019 • NOEKS2016 • Third Annual Conference on Optical Nanospectroscopy • Plasmonics Italy
Projects as PI	• Project: Infrared detection using quantum wells of van der Waals semiconductors "Progetti per Avvio alla Ricerca - Tipo 2", 2021. Funding: 3.2 kEur
Computer Skills	Good command of Matlab, C, Phyton, Maple, Igor, Origin, Quantum Espresso, Office, LateX and others
Language skills	• Mother tongue: Italian. • Others languages: English (C1), German (B2), and Spanish (B1).

Rome, 27.04.2022

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