



SCUOLA
NORMALE
SUPERIORE

RELAZIONE ATTIVITA' ANNUALE DEI PERFEZIONANDI/DOTTORANDI – SECONDO ANNO
REPORT ON THE PHD ACTIVITY – SECOND YEAR

NOME E COGNOME NAME AND SURNAME	Vladislav Khaustov
DISCIPLINA PHD COURSE	Nanoscience

CORSI FREQUENTATI CON SOSTENIMENTO DI ESAME FINALE ATTENDED COURSES (WITH FINAL EXAM)	VOTAZIONE RIPORTATA MARK	NUMERO DI ORE HOURS
Italian language Course B1	68	60

CORSI FREQUENTATI SENZA SOSTENIMENTO DI ESAME FINALE ATTENDED COURSES (ATTENDANCE ONLY)	NUMERO DI ORE HOURS

ALTRE ATTIVITÀ FORMATIVE (SEMINARI, WORKSHOP, SCUOLE ESTIVE, ECC.) – DESCRIZIONE OTHER PHD ORIENTED ACTIVITIES (SEMINARS, WORKSHOPS, SUMMER SCHOOLS, ETC) – DESCRIPTION	NUMERO DI ORE HOURS
NanolInnovation 2020 SPM School	19



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ATTIVITÀ DI RICERCA SVOLTA (MAX. 8.000 CARATTERI)*

RESEARCH ACTIVITY (MAX. 8000 CHARACTERS)

During the second academic year, I performed the following activities:

- 1) I attended series of lectures at the NanoInnovation 2020 Scanning Probe Microscopy School;
- 2) I delved deeper into the practical and theoretical aspects of my project. Experimental and theoretical methods of inducing phase transitions between 2H (semiconducting) and 1T' (semimetallic) phases in monolayer MoTe₂ and recent advances in this field have been studied. Based on the data published in theoretical papers, phase diagrams for such parameters as temperature, electron and hole excess charge, Te vacancies have been plotted and examined;
- 3) I started to grow mono- and few-layer MoTe₂ on the SiO₂ substrate using CVD method and did material characterization by Raman spectroscopy and AFM. To study the charge transfer induced phase transitions, after the transfer onto the Gold and Platinum substrates, hBN encapsulated 2H and 1T' MoTe₂ monolayers have been examined by Raman spectroscopy method. Several attempts to induce the 2H – 1T' phase transition have been performed by applying voltage in CAFM and STM.

*se si intende sottoporre una relazione di ricerca più estesa, utilizzare il campo per una descrizione sintetica e allegare il documento in formato .pdf

If you are going to submit a longer report, please fill the box with a synthetic abstract and attach a document in pdf format

EVENTUALI PUBBLICAZIONI

PUBLICATIONS (IF AVAILABLE)

NOME DEL RELATORE

THESIS ADVISOR

Camilla Coletti

DATA

DATE

16.10.2020

FIRMA

SIGNATURE