



Omer Arif

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Date of birth [Redacted]

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WORK EXPERIENCE

Postdoctoral researcher

Istituto Nanoscienze—CNR [01/05/2021 – Current]

City: Pisa

Country: Italy

Currently, I am working as a postdoctoral researcher in the institute of NANO-CNR. My research is focused on the growth and characterization of Au-assisted GaAs/GaP superlattice nanowires.

P.h.D Student

Scuola Normale Superiore [01/11/2016 – 10/06/2021]

City: PISA

Country: Italy

During my Ph.D. study, I have learned the epitaxial growth of III-V Semiconductors materials on Si (111) substrates by Chemical Beam Epitaxy. My activity is focused on the growth of InAs and InSb based heterostructures nanowires.

I have studied detailed morphological, structural, and compositional analyses of the nanowires as a function of growth parameters by scanning and transmission electron microscopy and by energy-dispersive X-ray spectroscopy.

Master in Solid State Physics


Centre of Excellence in Solid State Physics, University of the Punjab [01/09/2013 – 01/10/2015]

City: Lahore

Country: Pakistan

My Master thesis was focused on the synthesis of barium hexaferrites nanoparticles by the sol-gel method and their morphological, structural, magnetic, and dielectric characterization studies.

09/09/2021



EDUCATION AND TRAINING

P.h.D in Nanoscience

Scuola Normale Superiore [01/11/2016 – 07/07/2021]

Address: PISA (Italy)

Thesis title: "Self-catalyzed and catalyst-free III-V Semiconductor Nanowires grown by CBE"

Supervisor: Prof. Lucia Sorba

Master in Solid State Physics

University of the Punjab [01/09/2013 – 01/10/2015]

Address: Lahore (Pakistan)

Thesis title: "Effect of sintering temperature on structural, morphological, dielectric and magnetic properties of barium hexaferrites nanocrystallites"

Grade: Very good

Bachelor of Science (B.Sc Honours) in Physics

University of the Punjab [01/09/2009 – 24/07/2013]

Address: Lahore (Pakistan)

JOB-RELATED SKILLS

Job-related skills

1. Vacuum & Growth System

- Epitaxial Growth of III-As and III-Sb based Semiconductors Nanowires by Chemical Beam Epitaxy
- Experience working with calibration of growth rates and maintenance of CBE system
- Growth of thin films by RF magnetron sputtering unit

2. Characterization techniques

- Scanning electron microscopy: Imaging, Energy dispersive x-ray spectroscopy (EDX)
- Data analysis of Transmission electron microscopy
- Optical microscopy

3. Optical lithography

- Prepared pattern substrates for the selective area growth

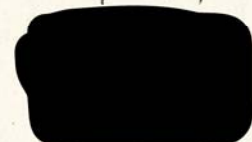
4. Other relevant skills

- Working experience in cleanroom environment ISO 6 and ISO 7
- Oxygen plasma cleaning
- Metal evaporation
- Profilometer
- Wet/dry Etching
- Served as trainer for different equipment for others students

DIGITAL SKILLS

Microsoft Word / Microsoft Excel / Power Point / ImageJ / Origin Pro / Matlab (Basic) / Microsoft Office / Inkscape

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COMMUNICATION AND INTERPERSONAL SKILLS

Soft skills

- Ability to work autonomously and in a multi-cultural collaborative environment
- Quick learner
- Problem-solving
- Well-disciplined

LANGUAGE SKILLS

Mother tongue(s):

Urdu

Other language(s):

English

LISTENING C1 READING C2 WRITING C2

SPOKEN PRODUCTION C2 SPOKEN INTERACTION C2

PUBLICATIONS

Publications

1. Self-catalyzed InSb/InAs quantum dot nanowires

Omer Arif, Valentina Zannier, Francesca Rossi, Daniele Ercolani, Fabio Beltram, Lucia Sorba
Nanomaterials **2021**, 11(1), 179.

2. Electrical probing of carrier separation in InAs/InP/GaAsSb core-dualshell nanowires

Sedighe Salimian, **Omer Arif**, Valentina Zannier, Daniele Ercolani, Francesca Rossi, Zahra Sadre Momtaz, Fabio Beltram, Sefano Roddaro, Francesco Rossella, Lucia Sorba
Nano Res. **2020**, 13, 1065–1070.

<https://link.springer.com/article/10.1007/s12274-020-2745-5>

3. Growth of Self-Catalyzed InAs/InSb Axial Heterostructured Nanowires: Experiment and Theory

Omer Arif, Valentina Zannier, Vladimir G Dubrovskii, Igor V Shtrom, Francesca Rossi, Fabio Beltram, Lucia Sorba
Nanomaterials **2020**, 10(3), 494.

<https://www.mdpi.com/2079-4991/10/3/494>.

4. Growth and strain relaxation mechanisms of InAs/InP/GaAsSb core-dual-shell nanowires

Omer Arif, Valentina Zannier, Ang Li, Francesca Rossi, Daniele Ercolani, Fabio Beltram, Lucia Sorba
Cryst. Growth Des. **2020**, 20(2), 1088–1096.

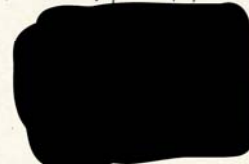
<https://pubs.acs.org/doi/10.1021/acs.cgd.9b01421>

5. Influence of sintering temperature on structural, morphological and magnetic properties of barium hexaferrite nanoparticles

M Burhan Shafqat, **Omer Arif**, Shahid Atiq, Murtaza Saleem, Shahid M Ramay, Asif Mahmood, Shahzad Naseem
Mod. Phys. Lett. B **2016**, 30(9), 1650254.

<https://www.worldscientific.com/doi/abs/10.1142/S0217984916502547>

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CONFERENCES AND SEMINARS

Conferences

1. InAs/InP/GaAsSb core-dual-shell nanowires: growth, strain relaxation, and carrier separation

O. Arif, V. Zannier, A. Li, F. Rossi, S. Salimian, D. Ercolani, Z. S. Momtaz, S. Roddaro, F. Rossella, F. Beltram and L. Sorba

Euromat 2021 Virtual Conference (European congress and exhibition on advance materials and processes)
13-17 September 2021

Presented: **Oral talk**

2. Self-catalyzed InSb/InAs Quantum Dot Nanowires

O. Arif, V. Zannier, V. G. Dubrovskii, I. V. Shtrom, F. Rossi, D. Ercolani, F. Beltram, L. Sorba

21st Intl. Conference on Molecular Beam Epitaxy (ICMBE) Virtual Conference 6-9 September 2021

Presented: **Oral talk**

3. Strain Relaxation Mechanisms in InAs/InP/GaSb Core-Multishell Nanowires

O. Arif, V. Zannier, D. Ercolani, A. Li, F. Rossi, S. Salimian, S. Roddaro, F. Rossella, F. Beltram and L. Sorba

FisMat 29 September to 4th October 2019, Catania, Italy.

Presented: **Oral talk**

4. Strain Relaxation Mechanisms in InAs/InP/GaSb Core-Multishell Nanowires

O. Arif, V. Zannier, D. Ercolani, A. Li, F. Rossi, S. Salimian, S. Roddaro, F. Rossella, F. Beltram and L. Sorba

Nanowires Week 23-27 September 2019, Pisa, Italy.

Presented: **Poster**

5. Influence of sintering temperature on structural, morphological and magnetic properties of barium hexaferrite nanoparticles

O. Arif, M. B. Shafqat, S. Atiq, M. Saleem, S. M. Ramay, A. Mahmood, and S. Naseem

International conference of Solid State Physics 13-17 December 2015, University of the Punjab, Lahore, Pakistan.

Presented: **Oral talk**

HONOURS AND AWARDS

Honours and awards

1. I was awarded one full four years scholarship for the Ph.D. program in Nanosciences by the Scuola Normale Superiore, Pisa Italy in 2016.

2. Got 2nd Position in Master (Solid State Physics) among 22 students (2013-2015).

09/09/2021

