

Shrikant Siddheshwar Kawale**Ph.D.**

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Education:

01/2010- 04/2015

Institute

Thesis title

Ph.D. in Nanotechnology

University of Genoa, Genoa, Italy.

‘Strain engineering in Iron Chalcogenide superconducting thin film deposited by pulsed laser ablation’

07/2005- 12/2007

Institute

Project title

M.Sc. in Physics passed with First Class

Department of Physics, Shivaji University, Kolhapur, India.

‘Synthesis and characterization of NiO-SDC material as an Anode for Solid Oxide Fuel Cells’

Employments:

04/2014 – 07/2015

Institute

Post-Doctoral Research Fellow

CNR-SPIN Institute, Genoa, Italy

- Synthesis of Fe-Chalcogenide thin films by Pulsed Laser Deposition.
- Investigation of film growth process *in-situ* by RHEED and *ex-situ* by XRD and AFM. Surface and structural characterization by AFM and STM to understand its correlation with flux pinning.
- Detailed investigation of superconducting properties of thin films and fabricated JJ devices.
- Studied suitability of Fe(Se,Te) superconducting material for practical applications at low temperatures and high fields.

01/2010 – 12/2010

Institute

MIUR (Italian Ministry of Education, Universities and Research) Research Fellow

Department of Physics, University of Genoa, Italy

- Studied Ink-Jet printing technique for fabrication of energy devices.
- Synthesis of nano-material based inks. Employed Epson ink-jet printer to fabricate thin films on plastic.

10/2007 – 12/2009

Institute

Junior and Senior Research fellow

Nanotechnology Research Center, Birla College, Kalyan, India.

- Preparation of carbon nanomaterials and thin film by CVD from low cost–plant derived precursor and investigation of their potential for Photovoltaic.
- Laboratory maintenance, Submitting annual accounts and progress reports to funding agency.

Awards and Achievements:

- Chaired a session (3A-M-P-03-Transport II) at European Conference on Applied Superconductivity-EUCAS-2015, 6-10th Sept. 2015, Lyon, France.
- Played an active role in organization of European Conference on Applied Superconductivity EUCAS-2013 at Genoa, Italy.
- Awarded **MIUR Fellowship** in 2010 by The Ministry of Education, Universities and Research, Italy.

Funding Attracted:

- Successfully completed ‘**CNR-SPIN funded SEED Project for young researchers– 2013**’ (of worth € 8000) as a **Principal Investigator (PI)**.

Research Skills: Proficient in following techniques–

- Thin film fabrication techniques as Pulsed Laser Ablation system employing Nd-YAG Solid state ($\lambda = 1064$ nm) and KrF excimer laser ($\lambda = 248$ nm).
- Device fabrications and patterning with the help of Photolithography, Spin coating, Chemical and Gas etching and related clean room facilities.
- Chemical Vapor deposition to synthesize carbon nano materials.
- X-Ray Diffraction studies (XRD), Reflection high-energy electron diffraction (RHEED), Scanning Electron Microscopy (SEM), Atomic Force Microscopy for structural properties.
- SQUID magnetometer to investigate magnetic properties of materials.
- Quantum Design PPMS to investigate critical superconducting properties of materials.

Memberships:

1. IEEE Member affiliated with the Council of Superconductivity since September 2015.
2. Life member of Indian Carbon Society, New Delhi India (LM – 280).

Mentoring: Successfully mentored following Bachelor’s degree students –

Students name	Completed on	Thesis title
1. Marco Capra	Ongoing	Pulsed laser deposition of Fe(Se,Te) film on bicrystalline SrTiO ₃ substrate to study grain boundary.
2. Alice Moros	Nov. 2014	Synthesis of Fe(Se,Te) thin films on monocrystalline and bicrystalline substrate in Material Science.
3. Gregorio Boccalero	Nov. 2013	Study of Hard and Soft magnetic materials by SQUID.
4. Matteo Vigogna	Feb. 2013	Deposition of FeTe films by pulsed laser ablation and study of their transport properties.

1. Prof. Marina Putti

Associate Professor,
Department of Physics, University of Genoa,
Via Dodecaneso, 33-Genoa -16146, Italy.
E-mail: putti@fisica.unige.it
Phone: +39-010-3536383.

2. Prof. Carlo Ferdeghini

Director,
CNR – SPIN Institute,
Corso Perrone 24, 16152 Genoa, Italy.
E-mail: carlo.ferdeghini@spin.cnr.it
Phone: +39-010-6598761.

List of Publications:**Author h-index: 8****Total number of citations: 158****A) Scholarly book chapters:**

1. **Shrikant Kawale**, Madhuri Sharon
Chapter- 'Natural Precursors for synthesis of carbon Nano Material'
Book- 'Carbon Nano Forms and Applications' forwarded by Nobel laureate Sir Harold Kroto, edited by Maheshwar Sharon and Madhuri Sharon
McGraw Hill Publications, USA, ISBN: 978-0-07-163960-6 (2010)

B) Refereed journal articles:

1. **S. Kawale**, E. Bellingeri, V. Braccini, R. Buzio, A. Gerbi, A. Sala, E. Reich, B. Holzapfel, M. Adamo, E. Sarnelli, C. Tarantini, M. Putti, C. Ferdeghini
'Potentiality for Low Temperature – High Field application of Iron chalcogenide thin films',
IEEE Transactions on Applied Superconductivity 25 (7300305), 2015.
[Journal Impact Factor: 1.235, JCR Ranking: 92/144 in physics, applied]
2. Antonio Leo, Pasquale Marra, Gaia Grimaldi, Roberta Citro, **Shrikant Kawale**, Emilio Bellingeri, Carlo Ferdeghini, Sandro Pace, and Angela Nigro
'Competition between intrinsic and extrinsic effects in the quenching of the superconducting state in Fe(Se,Te) thin films',
Phys. Rev. B 93 (054503), 2016.
[Journal Impact Factor: 3.736, JCR Ranking: 14/67 in Physics, Condensed Matters]
3. E. Bellingeri, **S. Kawale**, F. Caglieris, V. Braccini, G. Lamura, L. Pellegrino, A. Sala, M. Putti, C. Ferdeghini, A. Jost, U. Zeitler, C. Tarantini, J. Jaroszynski
'High field vortex phase diagram of Fe(Se,Te) thin films'
Supercond. Sci. Technol. 27 (044007), 2014.
[Journal Impact Factor: 2.325, JCR Ranking: 21/67 in Physics, condensed matter]
4. **S. Kawale**, E. Bellingeri, V. Braccini, I. Pallecchi, M. Putti, G. Grimaldi, A. Leo, A. Guarino, A. Nigro, C. Ferdeghini,
'Comparison of superconducting properties of FeSe_{0.5}Te_{0.5} thin films grown on different substrates',
IEEE Trans. On Appl. Supercond. 23 (7500704), 2013.
[Journal Impact Factor: 1.235, JCR Ranking: 92/144 in physics, applied]
5. V. Braccini, **S. Kawale**, E. Reich, E. Bellingeri, L. Pellegrino, A. Sala, M. Putti, K. Higashikawa, T. Kiss, B. Holzapfel, C. Ferdeghini
'Highly effective and isotropic pinning in epitaxial Fe(Se,Te) thin films grown on CaF₂ substrates',

- Appl. Phys. Lett., 103 (172601), 2013.
[Journal Impact Factor: 3.569, JCR Ranking: 21/144 in Physics, Applied]
6. E Bellingeri, **S Kawale**, V Braccini, R Buzio, A Gerbi, A Martinelli, M Putti, I Pallecchi, G Balestrino, A Tebano and C Ferdeghini,
'Tuning of the superconducting properties of FeSe_{0.5}Te_{0.5} thin films through the substrate effect',
Supercond. Sci. Technol. 25, 084022, 2012.
[Journal Impact Factor: 2.325, JCR Ranking: 21/67 in Physics, condensed matter]
 7. E. Bellingeri, **S. Kawale**, I. Pallecchi, A. Gerbi, R. Buzio, V. Braccini, A. Palenzona, M. Putti, M. Adamo, E. Sarnelli, and C. Ferdeghini
'Strong vortex pinning in FeSe_{0.5}Te_{0.5} epitaxial thin film'
Applied Physics Letters, 100, 082601, 2012.
[Journal Impact Factor: 3.569, JCR Ranking: 21/144 in Physics, Applied]
 8. C. Toraci, A. Perasso, A. Massone, R. Buzio, A. Gerbi, **S. Kawale**, E. Bellingeri, C. Ferdeghini,
'An automatic method for atom's identification in Scanning Tunnelling Microscopy images of Fe-chalcogenide superconductors'
Journal of Microscopy 260(3), 2015.
[Journal Impact Factor: 2.331, JCR Ranking: 3/11 in microscopy]
 9. A Leo, G Grimaldi, A Guarino, F Avitabile, A Nigro, A Galluzzi, D Mancusi, M Polichetti, S Pace, K Buchkov, E Nazarova, **S Kawale**, E Bellingeri and C Ferdeghini
'Vortex pinning properties in Fe-chalcogenides',
Superconductor Science and Technology, 28 (12), 2015.
[Journal Impact Factor: 2.325, JCR Ranking: 21/67 in Physics, condensed matter]
 10. A Perucchi, B Joseph, S. Caramazza, M. Autore, E. Bellingeri, **S Kawale**, C Ferdeghini, M Putti, S Lupi, P. Dore
'Two-band conductivity of a FeSe_{0.5}Te_{0.5} film by reflectance measurements in the terahertz and infrared range',
Supercon. Science and Technology 27 (125011), Dec. 2014.
[Journal Impact Factor: 2.325, JCR Ranking: 21/67 in Physics, condensed matter]
 11. E. Sarnelli, M. Adamo, C. Nappi, **S. Kawale**, E. Bellingeri, and C. Ferdeghini,
'Properties of high-angle Fe(Se,Te) bicrystal grain boundary junctions'
Appl. Phys. Lett. 104 (162601), Apr. 2014.
[Journal Impact Factor: 3.569, JCR Ranking: 21/144 in Physics, Applied]
 12. G. Bovone, M. Vignolo, C. Bernini, **S. Kawale**, A. S. Siri,
'Innovative technique to synthesize c-doped MgB₂ by using Chitosan as a carbon source',
Supercond. Sci. Techn. 27 (022001), Feb. 2014.
[Journal Impact Factor: 2.325, JCR Ranking: 21/67 in Physics, condensed matter]

13. Vignolo M., Bovone G, Bernini C, Palenzona A, **Kawale S**, Romano G, Siri
'High temperature heat treatment on boron precursor and PIT process optimization to improve Jc performances of MgB₂ based conductors',
Supercond. Sci. Technol. 26 (105022), 2013.
[Journal Impact Factor: 2.325, JCR Ranking: 21/67 in Physics, condensed matter]
14. A. Leo, A. Guarino, G. Grimaldi, A. Nigro, S. Pace, E. Bellingeri, **S. Kawale**, C. Ferdeghini and E. Giannin
Comparison of the pinning energy in Fe(Se_{1-x}Te_x) compound between single crystals and thin films
Journal of Physics: Conference Series 507 (012029), 2014
15. G. Garbarino, P. Riani, M. A. Lucchini, F. Canepa, **S. Kawale**, G. Busca
'Cobalt-based nanoparticles as catalysts for low temperature hydrogen production by ethanol steam reforming',
International Journal of Hydrogen Energy 38-1, 82–91, 2013.
[Journal Impact Factor: 3.659, JCR Ranking: 43/139 in chemistry/physical]
16. A Gerbi, R Buzio, E Bellingeri, **S Kawale**, D Marrè, A S Siri, A Palenzona and C Ferdeghini.
'Superconducting FeSe_{0.5}Te_{0.5} thin films: morphological and structural investigation with scanning tunneling microscopy and x-ray diffraction',
Supercond. Sci. Technol. 25, 012001, 2012.
[Journal Impact Factor: 2.325, JCR Ranking: 21/67 in Physics, condensed matter]
17. **Kawale S.**, Bhardwaj S., Kshirsagar D. E. Bhosale C.H., Sharon M, Sharon
'Thin Films of Carbon Nanomaterial from Natural Precursor by Hot Wire CVD'
M; Fullerenes Nanotubes and Carbon Nanostructures 19, 540, 2011.
[Journal Impact Factor: 0.836, JCR Ranking: 72/80 in nanoscience and nanotechnology]

Presentations at International conferences and meetings:

1. 'Strained Fe-Chalcogenide thin film for applications at low Temperature and high fields', **S. Kawale**, E. Sarnelli, M. Adamo, V. Braccini, M. Putti, E. Bellingeri, C. Ferdeghini, 608th WE-Heraeus-Seminar on Superconducting Materials on Their Way from Physics to Applications, 17 - 20 February 2016 at the Physikzentrum Bad Honnef, Germany. [Poster]
2. 'Detailed investigation of critical current density behaviour in FeSe_{0.5}Te_{0.5} films synthesized by pulsed laser ablation' **Kawale Shrikant**, Bellingeri Emilio, Ferdeghini Carlo, Putti Marina, European Conference on Applied Superconductivity-EUCAS-2015, 6-10th Sept. 2015, Lyon, France. [Oral]
3. 'High field vortex phase diagram of Fe(Se,Te) thin films with isotropic pinning grown on CaF₂ substrate', **S. Kawale**, V. Braccini, R. Buzio, A. Gerbi, E. Bellingeri, M. Putti, C. Ferdeghini, Second SUPER-IRON student workshop 6-8 April (2014), Tsukuba, Japan.[Oral]

4. 'Deposition of iron based superconducting Fe(Se_{0.5}Te_{0.5}) thin films by PLD and study of its various structural and electrical properties' by **S. Kawale**, E. Bellingeri, C. Ferdeghini, M. Putti. at SUPER-IRON Student Workshop May (2013) Bad Schandau, Germany.[Oral]
5. 'Pulsed Laser Deposition Of Iron Chalcogenide Thin Films' **S. Kawale**, V. Braccini, E. Bellingeri, A. Gerbi, R. Buzio, M. Putti, C. Ferdeghini, EUCAS (2013) Genoa, Italy. [Poster]
6. 'Tuning of superconducting properties of Fe(Se_{0.5}Te_{0.5}) by thin film technology' **S. Kawale**, E. Bellingeri, V. Braccini, I. Pallecchi, A. Gerbi, R. Buzio, A. Sala, A. Palenzona, M. Putti, D. Marré and C. Ferdeghini, International conference on solid films and surfaces (ICSFS-16) (2012), Genoa, Italy.[Oral]
7. 'Pulsed laser ablated superconducting thin film of Fe(Se_{0.5}Te_{0.5}) and their characterization' **S. Kawale**, E. Bellingeri, A. Gerbi, R. Buzio, M. Putti and C. Ferdeghini, European summer school on superconductivity June (2012), at Grenoble, France. [Poster]