

Curriculum Vitae of Chenhui Yan

Name: Chenhui Yan (颜晨晖)

Gender: Male

Date of Birth: 01/17/1987

Nationality: Chinese

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Address: Department of Physics and Astronomy, West Virginia University, Morgantown,
WV 26506, USA

Professional Skills

- Molecular beam epitaxy (**MBE**) growth of thin films.
 - Measurement and data analysis of magnetic and transport properties
 - Ultra-High Vacuum (**UHV**) system: operation, design and maintenance
 - Low-temperature scanning tunneling microscopy/spectroscopy (**STM/STS**)
 - Angle-Resolved Photoemission Spectroscopy (**ARPES**): Helium light source
 - Reflection High Energy Electron Diffraction (**RHEED**)
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Education

- **Postdoctoral associate (From 2017.04 to now)**
Department of Physics & Astronomy, West Virginia University, United States
Supervisor: Prof. Lian Li
<https://uwm.edu/lianliresearchgroup/>
Address: 135 Willey St., Morgantown, WV 26506
- **Postdoctoral associate (2015.12-2017.4)**
Department of Physics, University of Wisconsin-Milwaukee, United States
Supervisor: Prof. Lian Li
<https://uwm.edu/lianliresearchgroup/>

Address: 1900 E Kenwood Blvd, Milwaukee, WI 53211

- **Material Physics, Ph.D.** (2010.09-2015.12)

Institute of Metal Research, Chinese Academy of Science, China

Supervisor: Prof. Zhidong Zhang

<http://www.synl.ac.cn/org/mag/english.htm>

Address: No.72 Wenhua Road, Shenyang, China

Dissertation title: The MBE growth and electronic properties of topological crystalline insulator $Pb_{1-x}Sn_xTe$ thin film

- **Material Physics, PhD candidate** (2011.09-2014.09)

Department of Physics, Tsinghua University, China

Supervisor: Prof. Xi Chen and Prof. Qi-Kun Xue

http://www.phys.tsinghua.edu.cn/publish/phy/6032/2011/20110307111555980163111/20110307111555980163111_.html

http://www.phys.tsinghua.edu.cn/publish/phy/6032/2011/20110107120219381739912/20110107120219381739912_.html

Address: Science Building, Tsinghua University, Haidian District, Beijing, China

Dissertation title: The MBE growth and electronic properties of topological crystalline insulator $Pb_{1-x}Sn_xTe$ thin film

- **Material Science and Engineering, Bachelor** (2006.09-2010.07)

Department of Material Science and Engineering, Central South University, China

Supervisor: Prof. Changqing Xia

Address: No.932 Lushan South Road, Changsha, Hunan, China

Dissertation title: The Study of Performance of Boron Carbide and Aluminum Ceramic-metal Composites Prepared by Pressureless Infiltration Technology

Research Summary

- **Research Interests**

--Epitaxial growth of novel quantum materials including topological (crystalline) insulators, iron-based superconductors (FeSe/STO) and transition metal

dichalcogenides (MoS_2 , $\text{MoSe}(\text{Te})_2$, WS_2 , $\text{WSe}(\text{Te})_2$).

--Probing of the electronic and magnetic properties of the as-grown materials by STM, ARPES, PPMS.

- **Research Accomplishments**

--CVD growth of MoS_2 on SiO_2/Si , epitaxial graphene/SiC substrates, and STM studies of their electronic properties.

--MBE growth of single layer FeSe/FeTe on $\text{SrTiO}_3(001)$ substrate, and STM/STS characterization of their superconductivity.

--MBE growth of WSe_2 on epitaxial graphene/SiC substrates, and STM studies of their physical and electronic properties.

--Experimental observation of thickness-dependent topological phase transition in Sb films prepared by MBE.

--Direct observation of charging effect and mid-gap states at grain boundaries of MoS_2 .

--MBE growth of topological materials on different substrates: $\text{Bi}_2\text{Te}_3/\text{Bi}_2\text{Se}_3/\text{Sb}_2\text{Te}_3$, $\text{Pb}_{1-x}\text{Sn}_x\text{Te}(001)$, $\text{Pb}_{1-x}\text{Sn}_x\text{Te}(111)$ and Na_3Bi .

--Tuning the electronic structures of the as-grown materials by altering the substrate temperatures and elemental doping.

--Experimental observation of Dirac-like surface states and realization of topological phase transition in $\text{Pb}_{1-x}\text{Sn}_x\text{Te}$ systems.

Publication List

1. **C. H. Yan**, X. Dong, C. H. Li, L. Li. Charging effect at grain boundaries of MoS_2 . 2018 **Nanotechnology** 29,195704 (2018)
2. **C. H. Yan**, J. W. Liu, Y. Y. Zang, J. F. Wang, Z. Y. Wang, P. Wang, Z. D. Zhang, L. L. Wang, X. C. Ma, S. H. Ji, K. He, L. Fu, W. H. Duan, Q. -K. Xue, X. Chen. Experimental observation of Dirac-like surface states and topological phase transition in $\text{Pb}_{1-x}\text{Sn}_x\text{Te}(111)$ films. **Phys. Rev. Lett.** 112,186801 (2014)
3. **C. H. Yan**, H. Guo, J. Wen, Z. D. Zhang, L. L. Wang, K. He, X. C. Ma, S. H. Ji, X. Chen, Q. -K. Xue. Growth of topological crystalline insulator SnTe thin films on Si (111) substrate by molecular beam epitaxy. **Sur. Sci.** 621, 104-108 (2014)

4. H. Guo, **C. H. Yan**, J. W. Liu, Z. Y. Wang, R. Wu, Z. D. Zhang, L. Wang, K. He, X. C. Ma, S. H. Ji, W. H. Duan, X. Chen, Q. -K. Xue. Topological crystalline insulator $\text{Pb}_x\text{Sn}_{1-x}\text{Te}$ thin films on SrTiO_3 (001) with tunable Fermi levels. **APL Mater.** 2, 056106 (2014)
5. J. Wen, H. Guo, **C. H. Yan**, Z. Wang, K. Chang, P. Deng., T. Zhang, Z. D. Zhang, S. Ji, L. Wang, K. He, X. C. Ma, X. Chen, Q.-K. Xue. Semimetal Na_3Bi Thin Film Grown on Double-Layer Graphene by Molecular Beam Epitaxy. **Chin. Phys. Lett.** 31(11), 116802 (2014)
6. J. Wen, H. Guo, **C. H. Yan**, Z. Wang, K. Chang, P. Deng., T. Zhang, Z. D. Zhang, S. Ji, L. Wang, K. He, X. C. Ma, X. Chen, Q.-K. Xue. Synthesis of semimetal A_3Bi ($\text{A} = \text{Na}, \text{K}$) thin films by molecular beam epitaxy. **Appl. Sur. Sci.** 327, 213–217 (2015)
7. X. Dong, **C. H. Yan**, D. Tomer, C. H. Li, and L. Li. Spiral growth of few-layer MoS_2 by chemical vapor deposition. **Appl. Phys. Lett.** 109, 051604 (2016)

Conference Proceedings

- “Molecular beam epitaxial growth of topological crystalline insulator SnTe thin films”
CPS Meeting, Xiamen, China, 2013 (Poster)
- “Synthesis and electronic study of topological crystalline insulator $\text{Pb}_{1-x}\text{Sn}_x\text{Te}$ (111) thin films”
CPS Meeting, Harbin, China, 2014 (Poster)
- “Realization of topological phase transition in $\text{Pb}_{1-x}\text{Sn}_x\text{Te}$ (111) films”
APS March Meeting, San Antonio, American, 2015 (Oral)
- “Observation of thickness-dependent topological phase transition in Sb films”
APS March Meeting, New Orleans, American, 2017 (Oral)
- “Charging effect and mid-gap states at grain boundaries of MoS_2 ”
APS March Meeting, New Orleans, American, 2017 (Oral)
- “MBE growth and electronic properties of 2D topological insulators on Bi_2Te_3 ”
APS March Meeting, Los Angeles, American, 2018 (Oral)