Curriculum Vitae

Thang Bach Phan, Assoc. Prof. PhD

Senior Lecturer

[1] Center for Innovative Materials and Architectures (INOMAR), Vietnam National University, Ho Chi Minh City
[2] Department of Thin Films and Nanomaterial, Faculty of Materials Science, University of Science, Vietnam National University, Ho Chi Minh City
[3] Laboratory of Advanced Materials, University of Science, Vietnam National University, Ho Chi Minh City
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Education

Ph.D, Electronic Materials

Sungkyunkwan University, South Korea

BSc, Applied Physics

University of Science, Ho Chi Minh City, VietNam

Experience

Lecturer **2001 - 2004**

Faculty of Physics, University of Science, Ho Chi Minh City, VietNam

PhD student **2004 - 2009**

School of Advanced Materials Science & Engineering, Sungkyunkwan University, South Korea

Lecturer **11/2009 - 8/2016**

Senior Lecturer **8/2016 - present**

Depute Head - Department of Thin Film Materials & Devices, Faculty of Materials Science, University of Science, Ho Chi Minh City, VietNam. **7/2009 - 2/2012**

Deputy Head - Laboratory of Advanced Materials, University of Science, Ho Chi Minh City, VietNam **7/2010 - present**

Head - Department of Nano and Thin film Materials, Faculty of Materials Science, University of Science, Ho Chi Minh City, VietNam **2/2012 - present**

Vice Dean - Faculty of Materials Science, University of Science, Ho Chi Minh City, VietNam **2/2012 - 12/2016**

Director - Center for Innovative Materials and Architectures, Vietnam National University, Ho Chi Minh City **1/2017 - present**

Teaching

Undergraduate courses:

Fundamental of Materials Science; Magnetic Materials and Superconducting; Physics Properties of Semiconductor; Defect chemitry of metal oxides

Faculty of Materials Science, University of Science - Vietnam National University in HoChiMinh city, Vietnam (VNU-HCM).

Visiting lecturer

General Physics 1, 2 (*Taught in English*)

Advanced Education Program in Information System, University of Informatic Technology – Vietnam National University in HoChiMinh city, Vietnam (VNU-HCM).

Visiting lecturer

Physics of Interface and Surface; Thin Film Processes; Electronic devices (Taught in English)

Materials Science and Nanotechnology Program, University of Science and Technology of Hanoi (**France – Vietnam University**)

Graduate courses:

Materials Characterization Techniques

Faculty of Materials Science, University of Science - Vietnam National University in HoChiMinh city, Vietnam (VNU-HCM).

Visiting lecturer

Micro – Nano Devices and Systems

Master Degree Program of Nano Materials and Devices, Laboratory for Nanotechnology (LNT), Vietnam National University in Ho Chi Minh

Visiting lecturer

Defect Chemistry of Metal Oxides; Physical Properties of Semiconductor devices

Faculty of Physics and Engineering Physics, University of Science - Vietnam National University in HoChiMinh city, Vietnam (VNU-HCM).

Current Research

1. Thermoelectric thin films materials
2. Thin film process and properties of nanolaminate oxide for oxide electronics.
3. Physical properties and mechanisms of multifunctional artificial oxide system for emerging non volatile semiconductor memories (ReRAM): SrTiO3, ZnO, TiO2, CrOx, WOx…

4. Memristive Biosensor
5. Magnetic materials

Research projects

1. Electrical conduction and resistance switching mechanisms of nanostructural Cr-doped SrTiO3 and ZnO, TiO2 thin films applied in Electronic Memory Device, *Principal investigator*, The National Foundation for Science and Technology Development – Vietnam (NAFOSTED), 2010-2012.

2. Studying on ZnO Oxide Thin Films applied in Memory Devices, *Principal investigator,* Vietnam National University in HoChiMinh City, 2011.

3. Investigating Electrical conduction and reversible resistance switching mechanisms of Transition Metal Oxides WO_x for fabricating Random Access Memory, *Principal investigator,* Vietnam National University in HoChiMinh City (Key project VNU-B), 2013-2015.

4. Electrical conduction and resistance switching mechanisms of Chromium oxide thin film, *Principal investigator,* The National Foundation for Science and Technology Development – Vietnam (NAFOSTED), 2013-2015.

5. Transparent conducting oxide thin films IGZO for high temperature applications, *Principal investigator,* Bilateral Research VNUHCM – JAIST (Japan), 2013.

6. Study on fabrication of Memristive –Biosensor applied in biomedical analysis, *Principal investigator,* Bilateral Research, VNUHCM – VAST, 2015-2017.

7. Investigating of effects of In and Ga co-doping on thermoelectric properties of ZnO thin films for thermoelectric applications, *Principal investigator,* The National Foundation for Science and Technology Development – Vietnam (NAFOSTED), 2016-2018.

International Publications (SCI)

1. J. Kim, **B. T. Phan**, T. Choi, and J. Lee, *Growth mode of $La_{0.5}Sr_{0.5}CoO_3$ Thin Films with Oxygen Pressure on Stepped $SrTiO_3$ Substrate,* J. Kor. Phys. Soc. **49**, S604 (**2006**).
2. **B. T. Phan**, T. Choi, and J. Lee, *Trap-controlled Space-Charge-Limited Current Conduction of Cr-doped $SrTiO_3$ Thin Films,* J. Kor. Phys. Soc. **51**, 664 (**2007**).
3. C. Jung, T. Choi, **B. T. Phan**, and J. Lee, *Resistive Switching and Threshold Current of Cr-doped $SrTiO_3$ Thin Films deposited by Pulsed Laser Deposition,* Integ. Ferro. **90**, 107 (**2007**).
4. **B. T. Phan**, T. Choi, and J. Lee, *Impedance Spectroscopy Study on Trap-controlled Space-Charge-Limited Conduction of Cr-doped $SrTiO_3$ Thin Films,* Integ. Ferro. **96**, 146 (**2008**).
5. **B. T. Phan** and J. Lee, *Effects of Interfacial Oxygen-deficient Layer on Resistance Switching in Cr-doped $SrTiO_3$ Thin Films,* Appl. Phys. Lett. **93**, 222906 (**2008**).

6. **B. T. Phan**, N. C. Kim, and J. Lee, *Ac conductivity Cr-doped $SrTiO_3$ Thin Films,* J. Kor. Phys. Soc. **54**, 873 (**2009**).
7. **B. T. Phan** and J. Lee, *Non-adiabtic Small Polaron Tunneling Conduction in Reduced Cr-doped $SrTiO_{3-\delta}$ Thin Films*, Appl. Phys. Lett. **94**, 232102 (**2009**).
8. J. W. Seo, **B. T. Phan**, J. Stahn, J. Lee, and C. Panagopoulos. *Relaxor characteristics at the interfaces of $NdMnO_3/SrMnO_3/LaMnO_3$ superlattices,* Phys. Rev. B. **82**, 140405 (R) (**2010**).
9. J. W. Seo, **B. T. Phan**, J. Lee, H. D. Kim and C. Panagopoulos *Metallic characteristics in superlattices composed of insulators, NdMnO3/SrMnO3/LaMnO3,* Appl. Phys. Lett. **98**, 171910 (**2011**).
10. Tran Le, Hoang Cao Son Tran, Van Hieu Le, Tuan Tran, Cao Vinh Tran, Thanh Tan Vo, Mau Chien Dang, Sang Sub Kim, Jaichan Lee, **Bach Thang Phan,** *Unipolar resistance switching characteristics in thick ZnO/Cu/ZnO multilayer,* Journal of Korean Physical Society, **60**, 7, 1087**, (2012).**
11. **Bach Thang Phan**, Taekjib Choi, A. Romanenko, Jaichan Lee*, Hopping and trap controlled conduction in Cr-doped $SrTiO_3$ thin films,* Solid-State Electronics, **75**, 43-47 (**2012**).
12. Kim Ngoc Pham, Trung Do Nguyen, Thi Kieu Hanh Ta, Khanh Linh Dao Thuy, Van Hieu Le, Duy Phong Pham, Cao Vinh Tran, Derrick Mott, Shinya Maenosono, Sang Sub Kim, Jaichan Lee, Duc Thang Pham and **Bach Thang Phan,** *An influence of bottom electrode material on electrical conduction and resistance switching of TiOx thin films*, Eur. Phys. J. Appl. Phys. 64, 30102 (**2013**).
13. Trung Do Nguyen, Kim Ngoc Pham, Vinh cao Tran, Duy Anh Tuan Nguyen, and **Bach Thang Phan**, *Electrical Conduction and Resistance Switching Mechanisms of Ag/ZnO/Ti Structure*, Journal of Institute of Korean Electrical and Electronics Engineers, **17**,3, 229 – 233 (**2013**).

    Hung M Le, Nam H Vu, **Bach Thang Phan,** *Migrations of Oxygen Vacancy in Tungsten Oxide (WO3): A Density Functional Theory Study,* Computational Materials Science. **90**, 171 **(2014).**
14. Kim Ngoc Pham, Trung Do Nguyen, Thi Bang Tam Dao, Thi Kieu Hanh Ta, Vinh Cao Tran, Van Hieu Nguyen, Sang Sub Kim, Shinya Maenosono and **Bach Thang Phan,** *Different Directions of Switching of Chromium Oxide Thin Films,* Journal of Electronic Materials, **43**, 7, 2747-2753 (**2014**).
15. Duy Phong Pham, **Bach Thang Phan**, Van Dung Hoang, Huu Truong Nguyen, Thi Kieu Hanh Ta, Shinya Maenosono and Cao Vinh Tran, *Control of preferred (222) crystalline orientation of sputtered ITO thin films,* Thin Solid films*,* **570**, 16-19 (**2014**).
16. Tran Hoang Cao Son, Le Khac Top, Nguyen Thi Dong Tri, Ha Thuc Chi Nhan, Lam Quang Vinh, **Bach Thang Phan,** Sang Sub Kim, and Le Van Hieu, *Control of morphology and orientation of electrochemically grown ZnO nanorods by changing deposition current density,* Metals and Materials International. Met. Mater. Int. **20**, 2, 337 **(2014)**.
17. Thi Bang Tam Dao, Kim Ngoc Pham, Yi-Lung Cheng, Sang Sub Kim, **Bach Thang Phan,** *Correlation between crystallinity and resistive switching behavior of sputtered WO_3 thin films,* Current Applied Physics*,* **14**, 1707 (**2014**).
18. Duy Phong Pham, Huu Truong Nguyen, **Bach Thang Phan**, Thi My Dung Cao, Van Dung Hoang, Vinh Ai Dao, Junsin Yi, and Cao Vinh Tran, *In and Ga Codoped ZnO Film as a Front Electrode for Thin Film Silicon Solar Cells*, Advances in Condensed Matter Physics, Article ID 971528 (**2014**).
19. Pham Van Viet, **Bach Thang Phan**, Le Van Hieu and Cao Minh Thi, *The effect of acid treatment and reactive temperature on the formation of TiO2 nanotubes*, Journal of Nanoscience and Nanotechnology, **15**, 5202-5206 (**2015**).

20. Duy Phong Pham, Huu Truong Nguyen, **Bach Thang Phan**, Van Dung Hoang, Shinya Maenosono and Cao Vinh Tran, *Influence of addition of indium and of post-annealing on structural, electrical and optical properties of gallium-doped zinc oxide thin films deposited by direct-current magnetron sputtering*, Thin Solid Films, **583**, 201 (**2015**).
21. Kim Ngoc Pham, Minsu Choi, Cao Vinh Tran, Trung Do Nguyen, Van Hieu Le, Taekjib Choi, Jaichain Lee, and **Bach Thang Phan**, *Resistive switching effect in chromium oxide thin films probed by conductive atomic force microscopy*, Journal of Electronic Materials. 44, 10, 3395 (**2015**).
22. Cao Thi My Dung, Tran Thi Như Hoa, Ta Thi Kieu Hanh, Tran Cao Vinh, Le Van Hieu, **Phan Bach Thang**, *Relaxor behaviour in 0.5BaTiO3 – 0.5CoFe2O4 composite materials*, Journal of Magnetics, 20 (4), 353 (**2015**).
23. Thi Kieu Hanh Ta, Bang Tam Thi Dao, Kim Ngoc Pham, Dai Lam Tran and **Bach Thang Phan**, *Understanding electrical conductions in WO3 thin films applied for resistive random access memory*, Journal of Electronic Materials, 45,5, 2423 (**2016**).
24. Kim Ngoc Pham, Van Dung Hoang, Cao Vinh Tran and **Bach Thang Phan**, *TiO_2 thin film based transparent flexible resistive switching random access memory*, Journal of Adv. Nat. Sci.: Nanosci. Nanotechnol, 7, 015017 (**2016**).
25. Ngoc Kim Pham, Kieu Hanh Thi Ta, Thi Lien Thuong Nguyen, Vinh Cao Tran, and **Bach Thang Phan**, *Surface mapping of resistive switching CrOx thin films*, Advances in Materials Physics and Chemistry, Non ISI, DOI: 10.4236/ampc.2016.63003, Vol 3, 3, March (**2016**).
26. Thi Thanh Cao, Van Chuc Nguyen, Hai Binh Nguyen, Hung Thang Bui, Thi Thu Vu, Ngoc Hong Phan, **Bach Thang Phan**, Le Hoan, Maxime Bayle, Matthieu Paillet, Jean Louis Sauvajol, Ngoc Minh Phan and Dai Lam Tran, *Fabrication of few-layer graphene film based field effect transistor and its application for trace-detection of herbicide atrazine,* Journal of Adv. Nat. Sci.: Nanosci. Nanotechnol, 7, 3, 035007 (**2016).**
27. Thi Kieu Hanh Ta, Minh-Thuong Trinh, Nguyen Viet Long, Thi Thanh My Nguyen, Thi Lien Thuong Nguyen, Cao Vinh Tran, **Bach Thang Phan**, Derrick Mott, Shinya Maenosono, Hieu Tran-Van and Van Hieu Le, *Synthesis and Surface Functionalization of Anti-T-Cell Antibody Coupled Fe3O4-SiO2-GPS-CDI Core-Shell Nanoparticles For Potential Applications in Bone Marrow Transplantation*, Colloids and Surfaces A: Physicochemical and Engineering Aspects, 54, 376 (**2016**).
28. Meena Rittiruam, Tosawat Seetawan, Sirakan Yokhasing, Korakot Matarat, **Phan Bach Thang**, Manish Kumar, Jeon Geon Han, *La/Sm/Er Cation Doping Induced Thermal Properties of SrTiO3 Perovskite*, Inorganic chemistry, 55, 8822 (**2016**).
29. Hong Nhat Nguyen Tran, Huu Truong Nguyen, Yi-ren Liu, Masoud Aminzare, Thanh Tuan Anh Pham, Cao Vinh Tran, Sunglae Cho, Deniz P. Wong, Kuei-Hsien Chen, Tosawat Seetawan and **Bach Thang Phan,** *Thermoelectric properties of Indium and Gallium dually-doped ZnO thin films,* ACS Appl. Mater. Interfaces*,* 8 (49), 33916–33923 (**2016**).
30. Pham Van Viet, **Bach Thang Phan**, Cao Minh Thi, Le Van Hieu, *Controlled formation of Silver nanoparticles on TiO2 nanotubes by photoreduction method*, Journal of Nanoscience and Nanotechnology, Accepted (**2017**).
31. Heongkyu Ju, Nhu Hoa Thi Tran, **Bach Thang Phan**, Won Jung Yoon, *Dielectric-metal based multilayers for surface plasmon resonance with enhanced quality factor of the plasmonic waves,* Journal of Electronic Materials, Accepted (**2017**).

32. Yi-Lung Cheng, Chih-Yen Lee, Yao-Liang Huang, Chung-Ren Sun, Wen-Hsi Lee, Giin-Shan Chen, Jau-Shiung Fang, and **Bach Thang Phan,** *Cu-induced Dielectric Breakdown of Porous Low Dielectric Constant Film,* Journal of Electronic Materials, Accepted (**2017**).
33. **Bach Thang Phan** and Jaichan Lee, *AC electrical conduction of Pt/Cr-SrTiO3-δ/Cr-SrTiO3/La0.5Sr0.5CoO3 thin films*, Journal of Electronic Materials, Accepted (**2017**).
34. Ngoc Kim Pham, Kieu Hanh Thi Ta, Vinh Cao Tran, Van Hieu Le, Bao Thu Le Nguyen, HeongKyu Ju, Tosawat Seetawan and **Bach Thang Phan,** *Effect of post–annealing processes on filamentary–based resistive switching mechanism of chromium oxide thin films,* Journal of Electronic Materials, Accepted (**2017**).
35. Thi Kieu Hanh Ta, Thi Nhu Hoa Tran, Quang Minh Nhat Tran, Duy Phong Pham, Kim Ngoc Pham, Thi Thanh Cao, Yong Soo Kim, Dai Lam Tran, Heongkyu Ju, and **Bach Thang Phan,** *Surface Functionalization of WO_3 Thin Films with (3-aminopropyl)triethoxysilane and succinic anhydride applied in memristor biosensor,* Under review (**2017**).
36. Yi-Lung Cheng, Tian-Cih Bo, Jia-Sheng Wei, **Bach Thang Phan,** *Pre-Deposition Oxygen Treatment on Electrical and Reliability Characteristics of HfO2 Gate Dielectrics,* Under review (**2017**).

AWARDS

2009 *Top 10 Young Scientist publish Good SCI paper*
Vietnam National University, HoChiMinh City (VNU-HCM).

2011 *Excellent Young Lecturer*
University of Science, Vietnam National University, HoChiMinh City.

Excellent Young Lecturer
Vietnam National University, HoChiMinh City (VNU-HCM).

Excellent Young Lecturer
HoChiMinh City, Vietnam.

2011 *Scientist has SCI Publication*
Vietnam National University, HoChiMinh City (VNU-HCM).

2012 *Scientist has SCI Publication*
Vietnam National University, HoChiMinh City (VNU-HCM).

2013 *Excellent Young Lecturer* – University of Science, Vietnam National University, HoChiMinh City.

Excellent Young Lecturer
Vietnam National University, HoChiMinh City (VNU-HCM).

Excellent Young Lecturer
HoChiMinh City, Vietnam.

2014 *Scientist has SCI Publication*
Vietnam National University, HoChiMinh City (VNU-HCM).

ACADEMIC ACTIVITIES

Advisory Committee **2012 – present**
Science Division of Advanced Materials and Nanotechnology – Saigon Hightech Park (SHTP), Vietnam

Editorial board member **2012 – present**
Journal of Institute of Korean Electrical and Electronics Engineers
2016 – present
Journal of Magnetics, SCIE journal, South Korea

Member **2001 – present**
Vietnam Physical Society (VPS)

2009 – present
Vietnam Materials Research Society (V-MRS)