References:

1. M. Z. Hasan, and C. L. Kane, "Colloquium: topological insulators," *Reviews of Modern Physics,* vol. 82, no. 4, pp. 3045, 2010.
2. B. Irfan, and R. Chatterjee, "Magneto-transport and Kondo effect in cobalt doped Bi2Se3 topological insulators," *Applied Physics Letters,* vol. 107, no. 17, pp. 173108, 2015.
3. B. A. Bernevig, T. L. Hughes, and S.-C. Zhang, "Quantum spin Hall effect and topological phase transition in HgTe quantum wells," *Science,* vol. 314, no. 5806, pp. 1757-1761, 2006.
4. M. König, S. Wiedmann, C. Brüne, A. Roth, H. Buhmann, L. W. Molenkamp, X.-L. Qi, and S.-C. Zhang, "Quantum spin Hall insulator state in HgTe quantum wells," *Science,* vol. 318, no. 5851, pp. 766-770, 2007.
5. Y. Chen, J. G. Analytis, J.-H. Chu, Z. Liu, S.-K. Mo, X.-L. Qi, H. Zhang, D. Lu, X. Dai, and Z. Fang, "Experimental realization of a three-dimensional topological insulator, Bi2Te3," *science,* vol. 325, no. 5937, pp. 178-181, 2009.
6. X. Dai, T. L. Hughes, X.-L. Qi, Z. Fang, and S.-C. Zhang, "Helical edge and surface states in HgTe quantum wells and bulk insulators," *Physical Review B,* vol. 77, no. 12, pp. 125319, 2008.
7. http://newton.phy.bme.hu/~szunyogh/Elszerk/time-reversal.pdf
8. J.M. Martínez-Duart ,R.J. Martín-Palma , F. Agulló-Rueda, Nanotechnology for microelectronics and optoelectronics, Elsevier, 2006, pp. 173-192.
9. Charles kane and Joel Moore, Topological insulators, IOP publishing, ISSN-0953-8585, pp. 32-36, 2011.
10. E. H. Hall, "XVIII. On the "Rotational Coefficient" in nickel and cobalt," The London, Edinburgh, and Dublin Philosophical Magazine and Journal of Science, vol. 12, no. 74, 1881, pp. 157-172.
11. N. Nagaosa, J. Sinova, S. Onoda, A. MacDonald, and N. Ong, "Anomalous hall effect," *Reviews of modern physics,* vol. 82, no. 2, pp. 1539, 2010.

12. M. Onoda, and N. Nagaosa, "Quantized anomalous Hall effect in two-dimensional ferromagnets: quantum Hall effect in metals," *Physical review letters,* vol. 90, no. 20, pp. 206601, 2003.

13. C. L. Kane, and E. J. Mele, "Quantum spin Hall effect in graphene," *Physical review letters,* vol. 95, no. 22, pp. 226801, 2005.

14. M. König, S. Wiedmann, C. Brüne, A. Roth, H. Buhmann, L. W. Molenkamp, X.-L. Qi, and S.-C. Zhang, "Quantum spin Hall insulator state in HgTe quantum wells," *Science,* vol. 318, no. 5851, pp. 766-770, 2007.

15. A. Roth, C. Brüne, H. Buhmann, L. W. Molenkamp, J. Maciejko, X.-L. Qi, and S.-C. Zhang, "Nonlocal transport in the quantum spin Hall state," *Science,* vol. 325, no. 5938, pp. 294-297, 2009.

16. C. Brüne, A. Roth, H. Buhmann, E. M. Hankiewicz, L. W. Molenkamp, J. Maciejko, X.-L. Qi, and S.-C. Zhang, "Spin polarization of the quantum spin Hall edge states," *Nature Physics,* vol. 8, no. 6, pp. 485, 2012.

17. C. Liu, T. L. Hughes, X.-L. Qi, K. Wang, and S.-C. Zhang, "Quantum spin Hall effect in inverted type-II semiconductors," *Physical review letters,* vol. 100, no. 23, pp. 236601, 2008.

18. J. E. Moore, and L. Balents, "Topological invariants of time-reversal-invariant band structures," *Physical Review B,* vol. 75, no. 12, pp. 121306, 2007.

19. R. Roy, "Topological phases and the quantum spin Hall effect in three dimensions," *Physical Review B,* vol. 79, no. 19, pp. 195322, 2009.

20. L. Fu, C. L. Kane, and E. J. Mele, "Topological insulators in three dimensions," *Physical review letters,* vol. 98, no. 10, pp. 106803, 2007.

21. S.-Y. Xu, C. Liu, N. Alidoust, M. Neupane, D. Qian, I. Belopolski, J. Denlinger, Y. Wang, H. Lin, and L. Wray, "Observation of a topological crystalline insulator phase and topological phase transition in $Pb_{1-x}Sn_xTe$," *Nature communications,* vol. 3, pp. 1192, 2012.

22. D. Hsieh, D. Qian, L. Wray, Y. Xia, Y. S. Hor, R. J. Cava, and M. Z. Hasan, "A topological Dirac insulator in a quantum spin Hall phase," *Nature,* vol. 452, no. 7190, pp. 970, 2008.

23. D. Hsieh, Y. Xia, D. Qian, L. Wray, J. Dil, F. Meier, J. Osterwalder, L. Patthey, J. Checkelsky, and N. Ong, "A tunable topological insulator in the spin helical Dirac transport regime," *Nature,* vol. 460, no. 7259, pp. 1101, 2009.

24. D. Hsieh, Y. Xia, D. Qian, L. Wray, F. Meier, J. Dil, J. Osterwalder, L. Patthey, A. Fedorov, and H. Lin, "Observation of time-reversal-protected single-Dirac-cone topological-insulator states in Bi_2Te_3 and Sb_2Te_3," *Physical review letters,* vol. 103, no. 14, pp. 146401, 2009.

25. P. Roushan, J. Seo, C. V. Parker, Y. S. Hor, D. Hsieh, D. Qian, A. Richardella, M. Z. Hasan, R. J. Cava, and A. Yazdani, "Topological surface states protected from backscattering by chiral spin texture," *Nature,* [1]vol. 460, no. 7259, pp. 1106, 2009.

26. H. Zhang, C.-X. Liu, X.-L. Qi, X. Dai, Z. Fang, and S.-C. Zhang, "Topological insulators in Bi 2 Se 3, Bi_2Te_3 and Sb_2Te_3 with a single Dirac cone on the surface," *Nature physics,* vol. 5, no. 6, pp. 438, 2009.

27. C.-X. Liu, X.-L. Qi, H. Zhang, X. Dai, Z. Fang, and S.-C. Zhang, "Model Hamiltonian for topological insulators," *Physical Review B,* vol. 82, no. 4, pp. 045122, 2010.

28. Y. Xia, D. Qian, D. Hsieh, L. Wray, A. Pal, H. Lin, A. Bansil, D. Grauer, Y. S. Hor, and R. J. Cava, "Observation of a large-gap topological-insulator class with a single Dirac cone on the surface," *Nature physics,* vol. 5, no. 6, pp. 398, 2009.

29. Y. Xia, L. Wray, D. Qian, D. Hsieh, A. Pal, H. Lin, A. Bansil, D. Grauer, Y. Hor, and R. Cava, "Electrons on the surface of Bi_2Se_3 form a topologically-ordered two dimensional gas with a non-trivial Berry's phase," *arXiv preprint arXiv:0812.2078,* 2008.

30. Y. S. Hor, P. Roushan, H. Beidenkopf, J. Seo, D. Qu, J. G. Checkelsky, L. A. Wray, D. Hsieh, Y. Xia, and S.-Y. Xu, "Development of ferromagnetism in the doped topological insulator $Bi_{2-x}Mn_xTe_3$," *Physical Review B,* vol. 81, no. 19, pp. 195203, 2010.

31. N. Jo, K. Lee, C. Kim, K. Okamoto, A. Kimura, K. Miyamoto, T. Okuda, Y. Kim, Z. Lee, and T. Onimaru, "Tuning of magnetic and transport properties in Bi_2Te_3 by divalent Fe doping," *Physical Review B,* vol. 87, no. 20, pp. 201105, 2013.

32. Y. Choi, N. Jo, K. Lee, H. Lee, Y. Jo, J. Kajino, T. Takabatake, K.-T. Ko, J.-H. Park, and M. Jung, "Simple tuning of carrier type in topological insulator Bi_2Se_3 by Mn doping," *Applied Physics Letters,* vol. 101, no. 15, pp. 152103, 2012.

33. Z. Wang, T. Lin, P. Wei, X. Liu, R. Dumas, K. Liu, and J. Shi, "Tuning carrier type and density in Bi_2 Se_3 by Ca-doping," *Applied physics letters,* vol. 97, no. 4, pp. 042112, 2010.

34. X. Wang, Y. Du, S. Dou, and C. Zhang, "Room temperature giant and linear magnetoresistance in topological insulator Bi_2Te_3 nanosheets," *Physical review letters,* vol. 108, no. 26, pp. 266806, 2012.

35. A. Abrikosov, "Quantum magnetoresistance," *Physical Review B,* vol. 58, no. 5, pp. 2788, 1998.

36. Z. Wang, L. Yang, X. Li, X. Zhao, H. Wang, Z. Zhang, and X. P. Gao, "Granularity controlled nonsaturating linear magnetoresistance in topological insulator Bi_2Te_3 films," *Nano letters,* vol. 14, no. 11, pp. 6510-6514, 2014.

37. K. Shrestha, V. Marinova, B. Lorenz, and P. C. Chu, "Shubnikov–de Haas oscillations from topological surface states of metallic $Bi_2Se_{2.1}Te_{0.9}$," *Physical Review B,* vol. 90, no. 24, pp. 241111, 2014.

38. A. P. Morales, A. Pourret, G. Knebel, G. Bastien, V. Taufour, D. Aoki, H. Yamagami, and J. Flouquet, "Thermoelectric power quantum oscillations in the ferromagnet UGe_2," *Physical Review B,* vol. 93, no. 15, pp. 155120, 2016.

39. D. Shoenberg, Magnetic Oscillations in Metals, Cambridge University Press, Cambridge, 1984

40. K. Matsubayashi, T. Terai, J. Zhou, and Y. Uwatoko, "Superconductivity in the topological insulator Bi_2Te_3 under hydrostatic pressure," *Physical Review B,* vol. 90, no. 12, pp. 125126, 2014.

41. S. Zhang, J. Zhang, X. Yu, J. Zhu, P. Kong, S. Feng, Q. Liu, L. Yang, X. Wang, and L. Cao, "The comprehensive phase evolution for Bi_2Te_3 topological compound as function of pressure," *Journal of Applied Physics,* vol. 111, no. 11, pp. 112630, 2012.

42. L. Zhao, H. Deng, I. Korzhovska, M. Begliarbekov, Z. Chen, E. Andrade, E. Rosenthal, A. Pasupathy, V. Oganesyan, and L. Krusin-Elbaum, "Emergent surface superconductivity in the topological insulator Sb_2Te_3," *Nature communications,* vol. 6, pp. 8279, 2015.

43. Y. S. Hor, A. J. Williams, J. G. Checkelsky, P. Roushan, J. Seo, Q. Xu, H. W. Zandbergen, A. Yazdani, N. Ong, and R. J. Cava, "Superconductivity in $Cu_xBi_2Se_3$ and its implications for pairing in the undoped topological insulator," *Physical review letters,* vol. 104, no. 5, pp. 057001, 2010.

44. C. S. Fadley, X-ray photoelectron spectroscopy: Progress and perspectives, Journal of Electron Spectroscopy and Related Phenomena 178-179, 2-32, (2010).

45. Magnetic Property Measurement System SQUID VSM User's Manual, Quantum Design, USA (2010).

46. G. Eguchi, K. Kuroda, K. Shirai, A. Kimura, and M. Shiraishi, "Surface Shubnikov–de Haas oscillations and nonzero Berry phases of the topological hole conduction in $Tl_{1-x}Bi_{1+x}Se_2$," *Physical Review B,* vol. 90, no. 20, pp. 201307, 2014.

47. Z. Ren, A. Taskin, S. Sasaki, K. Segawa, and Y. Ando, "Large bulk resistivity and surface quantum oscillations in the topological insulator Bi_2Te_2Se," *Physical Review B,* vol. 82, no. 24, pp. 241306, 2010.

48. Z. Ren, A. Taskin, S. Sasaki, K. Segawa, and Y. Ando, “Fermi level tuning and a large activation gap achieved in the topological insulator Bi_2Te_2Se by Sn doping,” *Physical Review B*, vol. 85, no. 15, pp. 155301, 2012.

49. Y. Choi, N. Jo, K. Lee, J. Yoon, C. You, and M. Jung, “Transport and magnetic properties of Cr-, Fe-, Cu-doped topological insulators,” *Journal of Applied Physics*, vol. 109, no. 7, pp. 07E312, 2011.

50. H.-T. He, G. Wang, T. Zhang, I.-K. Sou, G. K. Wong, J.-N. Wang, H.-Z. Lu, S.-Q. Shen, and F.-C. Zhang, “Impurity effect on weak antilocalization in the topological insulator Bi 2 Te 3,” *Physical review letters*, vol. 106, no. 16, pp. 166805, 2011.

51. K. Shrestha, M. Chou, D. Graf, H. Yang, B. Lorenz, and C. Chu, “Extremely large nonsaturating magnetoresistance and ultrahigh mobility due to topological surface states in the metallic Bi_2Te_3 topological insulator,” *Physical Review B*, vol. 95, no. 19, pp. 195113, 2017.

52. S. Barua, K. Rajeev, and A. K. Gupta, “Evidence for topological surface states in metallic single crystals of Bi_2Te_3,” *Journal of Physics: Condensed Matter*, vol. 27, no. 1, pp. 015601, 2014.

53. A. Taskin, Z. Ren, S. Sasaki, K. Segawa, and Y. Ando, “Observation of Dirac holes and electrons in a topological insulator,” *Physical Review Letters*, vol. 107, no. 1, pp. 016801, 2011.

54. A. Taskin, and Y. Ando, “Quantum oscillations in a topological insulator $Bi_{1-x}Sb_x$,” *Physical Review B*, vol. 80, no. 8, pp. 085303, 2009.

55. N. H. Tu, Y. Tanabe, K. K. Huynh, Y. Sato, H. Oguro, S. Heguri, K. Tsuda, M. Terauchi, K. Watanabe, and K. Tanigaki, “Van der Waals epitaxial growth of topological insulator $Bi_{2-x}S_xTe_{3-y}Se_y$ ultrathin nanoplate on electrically insulating fluorophlogopite mica,” *Applied Physics Letters*, vol. 105, no. 6, pp. 063104, 2014.

56. A. L. Friedman, J. L. Tedesco, P. M. Campbell, J. C. Culbertson, E. Aifer, F. K. Perkins, R. L. Myers-Ward, J. K. Hite, C. R. Eddy Jr, and G. G. Jernigan, "Quantum linear magnetoresistance in multilayer epitaxial graphene," *Nano letters*, vol. 10, no. 10, pp. 3962-3965, 2010.

57. R. Xu, A. Husmann, T. Rosenbaum, M.-L. Saboungi, J. Enderby, and P. Littlewood, "Large magnetoresistance in non-magnetic silver chalcogenides," *Nature*, vol. 390, no. 6655, pp. 57, 1997.

58. J. Hu, and T. Rosenbaum, "Classical and quantum routes to linear magnetoresistance," *Nature materials*, vol. 7, no. 9, pp. 697, 2008.

59. H. Tang, D. Liang, R. L. Qiu, and X. P. Gao, "Two-dimensional transport-induced linear magneto-resistance in topological insulator Bi_2Se_3 nanoribbons," *ACS nano*, vol. 5, no. 9, pp. 7510-7516, 2011.

60. B. Gao, P. Gehring, M. Burghard, and K. Kern, "Gate-controlled linear magnetoresistance in thin Bi_2Se_3 sheets," *Applied Physics Letters*, vol. 100, no. 21, pp. 212402, 2012.

61. X. He, T. Guan, X. Wang, B. Feng, P. Cheng, L. Chen, Y. Li, and K. Wu, "Highly tunable electron transport in epitaxial topological insulator $(Bi_{1-x}Sb_x)_2Te_3$ thin films," *Applied Physics Letters*, vol. 101, no. 12, pp. 123111, 2012.

62. Y. Zhang, K. He, C.-Z. Chang, C.-L. Song, L.-L. Wang, X. Chen, J.-F. Jia, Z. Fang, X. Dai, and W.-Y. Shan, "Crossover of the three-dimensional topological insulator Bi_2Se_3 to the two-dimensional limit," *Nature Physics*, vol. 6, no. 8, pp. 584, 2010.

63. V. Kul'bachinskii, A. Y. Kaminskii, K. Kindo, Y. Narumi, K. Suga, P. Lostak, and P. Svanda, "Low-temperature ferromagnetism in a new diluted magnetic semiconductor $Bi_{2-x}Fe_xTe_3$," *Journal of Experimental and Theoretical Physics Letters*, vol. 73, no. 7, pp. 352-356, 2001.

64. M. Watson, L. Collins-McIntyre, L. Shelford, A. I. Coldea, D. Prabhakaran, S. Speller, T. Mousavi, C. R. M. Grovenor, Z. Salman, and S. Giblin, "Study of the structural, electric and magnetic properties of Mn-doped Bi_2Te_3 single crystals," *New Journal of Physics,* vol. 15, no. 10, pp. 103016, 2013.

65. P. Larson, V. Greanya, W. Tonjes, R. Liu, S. Mahanti, and C. Olson, "Electronic structure of Bi_2X_3 (X= S, Se, T) compounds: Comparison of theoretical calculations with photoemission studies," *Physical review B,* vol. 65, no. 8, pp. 085108, 2002.

66. S. Hüfner, *Photoelectron spectroscopy: principles and applications*: Springer Science & Business Media, 2013.

67. M. Norman, M. Randeria, H. Ding, and J. Campuzano, "Phenomenology of the low-energy spectral function in high-Tc superconductors," *Physical Review B,* vol. 57, no. 18, pp. R11093, 1998.

68. H. Cao, R. Venkatasubramanian, C. Liu, J. Pierce, H. Yang, M. Zahid Hasan, Y. Wu, and Y. P. Chen, "Topological insulator Bi_2Te_3 films synthesized by metal organic chemical vapor deposition," *Applied Physics Letters,* vol. 101, no. 16, pp. 162104, 2012.

69. F. Sie, C. Kuo, C. Hwang, Y. Chou, C. Yeh, Y. Lin, and J. Huang, "Thermoelectric performance of n-Type Bi_2Te_3/Cu composites fabricated by nanoparticle decoration and spark plasma sintering," *Journal of Electronic Materials,* vol. 45, no. 3, pp. 1927-1934, 2016.

70. H. Wang, C.-K. Li, H. Liu, J. Yan, J. Wang, J. Liu, Z. Lin, Y. Li, Y. Wang, and L. Li, "Chiral anomaly and ultrahigh mobility in crystalline $HfTe_5$," *Physical Review B,* vol. 93, no. 16, pp. 165127, 2016.

71. Y. S. Kim, M. Brahlek, N. Bansal, E. Edrey, G. A. Kapilevich, K. Iida, M. Tanimura, Y. Horibe, S.-W. Cheong, and S. Oh, "Thickness-dependent bulk properties and weak antilocalization effect in topological insulator Bi_2Se_3," *Physical Review B,* vol. 84, no. 7, pp. 073109, 2011.

72. L. Zhang, R. Hammond, M. Dolev, M. Liu, A. Palevski, and A. Kapitulnik, "High quality ultrathin Bi_2Se_3 films on CaF_2 and CaF_2/Si by molecular beam epitaxy with a radio frequency cracker cell," *Applied Physics Letters,* vol. 101, no. 15, pp. 153105, 2012.

73. H. Wang, H. Liu, C.-Z. Chang, H. Zuo, Y. Zhao, Y. Sun, Z. Xia, K. He, X. Ma, and X. Xie, "Crossover between weak antilocalization and weak localization of bulk states in ultrathin Bi_2Se_3 films," *Scientific reports,* vol. 4, pp. 5817, 2014.

74. G. Bergmann, "G. Bergmann, Phys. Rep. 107, 1 (1984)," *Phys. Rep.,* vol. 107, pp. 1, 1984.

75. Y. Y. Li, G. Wang, X. G. Zhu, M. H. Liu, C. Ye, X. Chen, Y. Y. Wang, K. He, L. L. Wang, and X. C. Ma, "Intrinsic topological insulator Bi_2Te_3 thin films on Si and their thickness limit," *Advanced materials,* vol. 22, no. 36, pp. 4002-4007, 2010.

76. H. He, B. Li, H. Liu, X. Guo, Z. Wang, M. Xie, and J. Wang, "High-field linear magneto-resistance in topological insulator Bi_2Se_3 thin films," *Applied Physics Letters,* vol. 100, no. 3, pp. 032105, 2012.

77. D. Kong, Y. Chen, J. J. Cha, Q. Zhang, J. G. Analytis, K. Lai, Z. Liu, S. S. Hong, K. J. Koski, and S.-K. Mo, "Ambipolar field effect in the ternary topological insulator $(Bi_xSb_{1-x})_2Te_3$ by composition tuning," *Nature nanotechnology,* vol. 6, no. 11, pp. 705, 2011.

78. M. Lee, T. Rosenbaum, M.-L. Saboungi, and H. Schnyders, "Band-gap tuning and linear magnetoresistance in the silver chalcogenides," *Physical review letters,* vol. 88, no. 6, pp. 066602, 2002.

79. R. Yu, W. Zhang, H.-J. Zhang, S.-C. Zhang, X. Dai, and Z. Fang, "Quantized anomalous Hall effect in magnetic topological insulators," *Science,* vol. 329, no. 5987, pp. 61-64, 2010.

80. M. Parish, and P. Littlewood, “Non-saturating magnetoresistance in heavily disordered semiconductors,” *Nature,* vol. 426, no. 6963, pp. 162, 2003.

81. Y. Chen, J.-H. Chu, J. Analytis, Z. Liu, K. Igarashi, H.-H. Kuo, X. Qi, S.-K. Mo, R. Moore, and D. Lu, “Massive Dirac fermion on the surface of a magnetically doped topological insulator,” *Science,* vol. 329, no. 5992, pp. 659-662, 2010.

82. Q. Wang, W. Zhang, W. Chen, Y. Xing, Y. Sun, Z. Wang, J.-W. Mei, Z. Wang, L. Wang, and X.-C. Ma, “Spin fluctuation induced linear magnetoresistance in ultrathin superconducting FeSe films,” *2D Materials,* vol. 4, no. 3, pp. 034004, 2017.

83. P. Haazen, J.-B. Laloë, T. Nummy, H. Swagten, P. Jarillo-Herrero, D. Heiman, and J. Moodera, “Ferromagnetism in thin-film Cr-doped topological insulator Bi_2Se_3,” *Applied Physics Letters,* vol. 100, no. 8, pp. 082404, 2012.

84. H. Chi, W. Liu, K. Sun, X. Su, G. Wang, P. Lošt'ák, V. Kucek, Č. Drašar, and C. Uher, “Low-temperature transport properties of Tl-doped Bi_2Te_3 single crystals,” *Physical Review B,* vol. 88, no. 4, pp. 045202, 2013.

85. J. Li, Z. Mei, L. Liu, H. Liang, A. Azarov, A. Kuznetsov, Y. Liu, A. Ji, Q. Meng, and X. Du, “Probing defects in nitrogen-doped Cu_2O,” *Scientific Reports,* vol. 4, pp. 7240, 2014.

86. D. Gao, Z. Zhang, J. Fu, Y. Xu, J. Qi, and D. Xue, “Room temperature ferromagnetism of pure ZnO nanoparticles,” *Journal of Applied Physics,* vol. 105, no. 11, pp. 113928, 2009.

87. O. V. Yazyev, and L. Helm, “Defect-induced magnetism in graphene,” *Physical Review B,* vol. 75, no. 12, pp. 125408, 2007.

88. N. H. Hong, J. Sakai, and F. Gervais, “Magnetism due to oxygen vacancies and/or defects in undoped semiconducting and insulating oxide thin films,” *Journal of magnetism and magnetic materials,* vol. 316, no. 2, pp. 214-217, 2007.

89. K. Maiti, “Role of vacancies and impurities in the ferromagnetism of semiconducting CaB_6,” *EPL (Europhysics Letters)*, vol. 82, no. 6, pp. 67006, 2008.

90. Y. Gelbstein, J. Tunbridge, R. Dixon, M. J. Reece, H. Ning, R. Gilchrist, R. Summers, I. Agote, M. A. Lagos, and K. Simpson, “Physical, mechanical, and structural properties of highly efficient nanostructured n-and p-silicides for practical thermoelectric applications,” *Journal of Electronic Materials*, vol. 43, no. 6, pp. 1703-1711, 2014.

91. O. Appel, M. Schwall, D. Mogilyansky, M. Köhne, B. Balke, and Y. Gelbstein, “Effects of Microstructural Evolution on the Thermoelectric Properties of Spark-Plasma-Sintered $Ti_{0.3}Zr_{0.35}Hf_{0.35}NiSn$ Half-Heusler Compound,” *Journal of electronic materials*, vol. 42, no. 7, pp. 1340-1345, 2013.

92. O. Appel, T. Zilber, S. Kalabukhov, O. Beeri, and Y. Gelbstein, “Morphological effects on the thermoelectric properties of $Ti_{0.3}Zr_{0.35}Hf_{0.35}Ni_{1+\delta}$ Sn alloys following phase separation,” *Journal of Materials Chemistry C*, vol. 3, no. 44, pp. 11653-11659, 2015.

93. R. Vizel, T. Bargig, O. Beeri, and Y. Gelbstein, “Bonding of Bi_2Te_3-Based Thermoelectric Legs to Metallic Contacts Using $Bi_{0.82}Sb_{0.18}$ Alloy,” *Journal of Electronic Materials*, vol. 45, no. 3, pp. 1296-1300, 2016.

94. Y. Gelbstein, “$Pb_{1-x}Sn_xTe$ alloys: application considerations,” *Journal of electronic materials*, vol. 40, no. 5, pp. 533-536, 2011.

95. Y. Gelbstein, “Phase morphology effects on the thermoelectric properties of $Pb_{0.25}Sn_{0.25}Ge_{0.5}Te$,” *Acta Materialia*, vol. 61, no. 5, pp. 1499-1507, 2013.

96. B. Dado, Y. Gelbstein, D. Mogilansky, V. Ezersky, and M. P. Dariel, “Structural evolution following spinodal decomposition of the pseudoternary compound $(Pb_{0.3}Sn_{0.1}Ge_{0.6})$ Te,” *Journal of electronic materials*, vol. 39, no. 9, pp. 2165-2171, 2010.

97. A. Banerjee, B. Fauqué, K. Izawa, A. Miyake, I. Sheikin, J. Flouquet, B. Lenoir, and K. Behnia, "Transport anomalies across the quantum limit in semimetallic $Bi_{0.96}Sb_{0.04}$," *Physical Review B,* vol. 78, no. 16, pp. 161103, 2008.

98. G. J. Snyder, and E. S. Toberer, "Complex thermoelectric materials," *Nature materials,* vol. 7, no. 2, pp. 105, 2008.

99. S. Zhang, R. McDonald, A. Shekhter, Z. Bi, Y. Li, Q. Jia, and S. T. Picraux, "Magneto-resistance up to 60 Tesla in topological insulator Bi_2Te_3 thin films," *Applied Physics Letters,* vol. 101, no. 20, pp. 202403, 2012.

100. X. Wang, "Proposal for a new class of materials: spin gapless semiconductors," *Physical review letters,* vol. 100, no. 15, pp. 156404, 2008.

101. H.-Z. Lu, J. Shi, and S.-Q. Shen, "Competition between weak localization and antilocalization in topological surface states," *Physical review letters,* vol. 107, no. 7, pp. 076801, 2011.

102. M. Liu, J. Zhang, C.-Z. Chang, Z. Zhang, X. Feng, K. Li, K. He, L.-l. Wang, X. Chen, and X. Dai, "Crossover between weak antilocalization and weak localization in a magnetically doped topological insulator," *Physical review letters,* vol. 108, no. 3, pp. 036805, 2012.

103. J. J. Cha, M. Claassen, D. Kong, S. S. Hong, K. J. Koski, X.-L. Qi, and Y. Cui, "Effects of magnetic doping on weak antilocalization in narrow Bi_2Se_3 nanoribbons," *Nano letters,* vol. 12, no. 8, pp. 4355-4359, 2012.

104. J. R. Sootsman, D. Y. Chung, and M. G. Kanatzidis, "New and old concepts in thermoelectric materials," *Angewandte Chemie International Edition,* vol. 48, no. 46, pp. 8616-8639, 2009.

105. W.-S. Liu, Q. Zhang, Y. Lan, S. Chen, X. Yan, Q. Zhang, H. Wang, D. Wang, and G. Chen, "333 Ren, Z. Thermoelectric property studies on Cu-Doped n-type $Cu_xBi_2Te_{2.7}Se_{0.3}$ nanocomposites, Adv," *Energy. Mater,* vol. 1, pp. 577-587, 2011.

106. J. Na, Y. Kim, T. Park, C. Park, and E. Kim, "Preparation of Bismuth Telluride Films with High Thermoelectric Power Factor," *ACS Applied Materials & Interfaces,* vol. 8, no. 47, pp. 32392-32400, 2016.

107. H. Shang, H. Gu, Y. Zhong, F. Ding, G. Li, F. Qu, H. Zhang, Z. Dong, H. Zhang, and W. Zhou, "Synergetic combination of Te content and deposition temperature to optimize thermoelectric properties using sputtered bismuth telluride films," *Journal of Alloys and Compounds,* vol. 690, pp. 851-855, 2017.

108. H. Bottner, J. Nurnus, A. Gavrikov, G. Kuhner, M. Jagle, C. Kunzel, D. Eberhard, G. Plescher, A. Schubert, and K. H. Schlereth, "New thermoelectric components using microsystem technologies," *Journal of Microelectromechanical Systems,* vol. 13, no. 3, pp. 414-420, 2004.

109. S. T. Han, P. Rimal, C. H. Lee, H.-S. Kim, Y. Sohn, and S.-J. Hong, "Enhanced thermoelectric cooling properties of $Bi_2Te_{3-x}Se_x$ alloys fabricated by combining casting, milling and spark plasma sintering," *Intermetallics,* vol. 78, pp. 42-49, 2016.

110. Q. Jiang, J. Yang, J. Xin, Z. Zhou, D. Zhang, and H. Yan, "Carriers concentration tailoring and phonon scattering from n-type zinc oxide (ZnO) nanoinclusion in p-and n-type bismuth telluride (Bi_2Te_3): Leading to ultra low thermal conductivity and excellent thermoelectric properties," *Journal of Alloys and Compounds,* vol. 694, pp. 864-868, 2017.

111. H. Li, Y. Song, M.-Y. Yao, F. Yang, L. Miao, F. Zhu, C. Liu, C. Gao, D. Qian, and X. Yao, "Carriers dependence of the magnetic properties in magnetic topological insulator $Sb_{1.95-x}Bi_xCr_{0.05}Te_3$," *Applied Physics Letters,* vol. 101, no. 7, pp. 072406, 2012.

112. S. Hikami, A. I. Larkin, and Y. Nagaoka, "Spin-orbit interaction and magnetoresistance in the two dimensional random system," *Progress of Theoretical Physics,* vol. 63, no. 2, pp. 707-710, 1980.

113. F. Rosi, “Thermoelectricity and thermoelectric power generation,” *Solid-State Electronics,* vol. 11, no. 9, pp. 833-868, 1968.

114. B.-L. Huang, and M. Kaviany, “Ab initio and molecular dynamics predictions for electron and phonon transport in bismuth telluride,” *Physical Review B,* vol. 77, no. 12, pp. 125209, 2008.

115. J. Suh, K. M. Yu, D. Fu, X. Liu, F. Yang, J. Fan, D. J. Smith, Y. H. Zhang, J. K. Furdyna, and C. Dames, “Simultaneous enhancement of electrical conductivity and thermopower of Bi_2Te_3 by multifunctionality of native defects,” *Advanced Materials,* vol. 27, no. 24, pp. 3681-3686, 2015.

116. K. Zhao, Y.-F. Lv, S.-H. Ji, X. Ma, X. Chen, and Q.-K. Xue, “Scanning tunneling microscopy studies of topological insulators,” *Journal of Physics: Condensed Matter,* vol. 26, no. 39, pp. 394003, 2014.

117. J. G. Analytis, R. D. McDonald, S. C. Riggs, J.-H. Chu, G. Boebinger, and I. R. Fisher, “Two-dimensional surface state in the quantum limit of a topological insulator,” *Nature Physics,* vol. 6, no. 12, pp. 960-964, 2010.

118. D.-X. Qu, Y. S. Hor, J. Xiong, R. J. Cava, and N. Ong, “Quantum oscillations and Hall anomaly of surface states in the topological insulator Bi_2Te_3,” *Science,* vol. 329, no. 5993, pp. 821-824, 2010.

119. N. P. Butch, K. Kirshenbaum, P. Syers, A. B. Sushkov, G. S. Jenkins, H. D. Drew, and J. Paglione, “Strong surface scattering in ultrahigh-mobility Bi_2Se_3 topological insulator crystals,” *Physical Review B,* vol. 81, no. 24, pp. 241301, 2010.

120. J. G. Analytis, J.-H. Chu, Y. Chen, F. Corredor, R. D. McDonald, Z. Shen, and I. R. Fisher, “Bulk Fermi surface coexistence with Dirac surface state in Bi_2Se_3: A comparison of photoemission and Shubnikov–de Haas measurements,” *Physical Review B,* vol. 81, no. 20, pp. 205407, 2010.

121. M. Petrushevsky, E. Lahoud, A. Ron, E. Maniv, I. Diamant, I. Neder, S. Wiedmann, V. Guduru, F. Chiappini, and U. Zeitler, “Probing the surface states in

Bi_2Se_3 using the Shubnikov–de Haas effect," *Physical Review B,* vol. 86, no. 4, pp. 045131, 2012.

122. J. G. Checkelsky, Y. S. Hor, R. J. Cava, and N. Ong, "Bulk band gap and surface state conduction observed in voltage-tuned crystals of the topological insulator Bi_2Se_3," *Physical Review Letters,* vol. 106, no. 19, pp. 196801, 2011.

123. D. Kim, S. Cho, N. P. Butch, P. Syers, K. Kirshenbaum, S. Adam, J. Paglione, and M. S. Fuhrer, "Surface conduction of topological Dirac electrons in bulk insulating Bi_2Se_3," *Nature Physics,* vol. 8, no. 6, pp. 459-463, 2012.

124. H. Köhler, and H. Fischer, "Investigation of the conduction band fermi surface in Bi_2Se_3 at high electron concentrations," *physica status solidi (b),* vol. 69, no. 2, pp. 349-357, 1975.

125. B. Fauqué, N. P. Butch, P. Syers, J. Paglione, S. Wiedmann, A. Collaudin, B. Grena, U. Zeitler, and K. Behnia, "Magnetothermoelectric properties of Bi_2Se_3," *Physical Review B,* vol. 87, no. 3, pp. 035133, 2013.

126. J. Dyck, Č. Drašar, P. Lošt'ák, and C. Uher, "Low-temperature ferromagnetic properties of the diluted magnetic semiconductor $Sb_{2-x}Cr_xTe_3$," *Physical Review B,* vol. 71, no. 11, pp. 115214, 2005.

127. J. S. Dyck, P. Hájek, P. Lošt'ák, and C. Uher, "Diluted magnetic semiconductors based on $Sb_{2-x}V_xTe_3$ (0.01<~ x<~ 0. 0 3)," *Physical Review B,* vol. 65, no. 11, pp. 115212, 2002.

128. L. Zhao, H. Deng, I. Korzhovska, M. Begliarbekov, Z. Chen, E. Andrade, E. Rosenthal, A. Pasupathy, V. Oganesyan, and L. Krusin-Elbaum, "Emergent surface superconductivity in the topological insulator Sb_2Te_3," *Nature communications,* vol. 6, pp. 8279, 2015.

129. H. Köhler, "Conduction Band Parameters of Bi_2Se_3 from Shubnikov-de Haas Investigations," *physica status solidi (b),* vol. 58, no. 1, pp. 91-100, 1973.

130. L. Wu, W.-K. Tse, M. Brahlek, C. Morris, R. V. Aguilar, N. Koirala, S. Oh, and N. Armitage, "High-resolution Faraday rotation and electron-phonon

coupling in surface states of the bulk-insulating topological insulator $Cu_{0.02}Bi_2Se_3$," *Physical review letters,* vol. 115, no. 21, pp. 217602, 2015.

131. M. Bianchi, D. Guan, S. Bao, J. Mi, B. B. Iversen, P. D. King, and P. Hofmann, "Coexistence of the topological state and a two-dimensional electron gas on the surface of Bi_2Se_3," *Nature communications,* vol. 1, pp. 128, 2010.

132. L. Veyrat, F. Iacovella, J. Dufouleur, C. Nowka, H. Funke, M. Yang, W. Escoffier, M. Goiran, B. Eichler, and O. G. Schmidt, "Band bending inversion in Bi2Se3 nanostructures," *Nano letters,* vol. 15, no. 11, pp. 7503-7507, 2015.

133. J. S. Lee, A. Richardella, D. W. Rench, R. D. Fraleigh, T. C. Flanagan, J. A. Borchers, J. Tao, and N. Samarth, "Ferromagnetism and spin-dependent transport in n-type Mn-doped bismuth telluride thin films," *Physical Review B,* vol. 89, no. 17, pp. 174425, 2014.

134. Y. Yan, L.-X. Wang, D.-P. Yu, and Z.-M. Liao, "Large magnetoresistance in high mobility topological insulator Bi_2Se_3," *Applied Physics Letters,* vol. 103, no. 3, pp. 033106, 2013.

135. S. Kim, S. Vrtnik, J. Dolinšek, and M. Jung, "Antiferromagnetic order induced by gadolinium substitution in Bi_2Se_3 single crystals," *Applied Physics Letters,* vol. 106, no. 25, pp. 252401, 2015.

136. L. Yang, Z.-G. Chen, T. Nie, G. Han, Z. Zhang, M. Hong, K. L. Wang, and J. Zou, "Co-doped Sb_2Te_3 paramagnetic nanoplates," *Journal of Materials Chemistry C,* vol. 4, no. 3, pp. 521-525, 2016.

137. Z. Zhou, M. Žabèík, P. Lošták, and C. Uher, "Magnetic and transport properties of $Sb_{2-x}Fe_xTe_3$ ($0< x< 0.02$) single crystals," *Journal of applied physics,* vol. 99, no. 4, pp. 043901, 2006.

138. J. Choi, S. Choi, J. Choi, Y. Park, H. M. Park, H. W. Lee, B. C. Woo, and S. Cho, "Magnetic properties of Mn-doped Bi_2Te_3 and Sb_2Te_3," *physica status solidi (b),* vol. 241, no. 7, pp. 1541-1544, 2004.

139. Č. Drašar, J. Kašparová, P. Lošťák, X. Shi, and C. Uher, "Transport and magnetic properties of the diluted magnetic semiconductors $Sb_{1.98-x}V_{0.02}Cr_x Te_3$ and $Sb_{1.984-y}V_{0.016}Mn_yTe_3$," *physica status solidi (b),* vol. 244, no. 6, pp. 2202-2209, 2007.

140. A. Li, M. Shahbazi, S. Zhou, G. Wang, C. Zhang, P. Jood, G. Peleckis, Y. Du, Z. Cheng, and X. Wang, "Electronic structure and thermoelectric properties of Bi_2Te_3 crystals and graphene-doped Bi_2Te_3," *Thin Solid Films,* vol. 518, no. 24, pp. e57-e60, 2010.

141. R. He, B. Tang, C. Ton-That, M. Phillips, and T. Tsuzuki, "Physical structure and optical properties of Co-doped ZnO nanoparticles prepared by co-precipitation," *Journal of nanoparticle research,* vol. 15, no. 11, pp. 2030, 2013.

142. A. Amri, Z.-T. Jiang, P. A. Bahri, C.-Y. Yin, X. Zhao, Z. Xie, X. Duan, H. Widjaja, M. M. Rahman, and T. Pryor, "Surface electronic structure and mechanical characteristics of copper–cobalt oxide thin film coatings: soft x-ray synchrotron radiation spectroscopic analyses and modeling," *The Journal of Physical Chemistry C,* vol. 117, no. 32, pp. 16457-16467, 2013.

143. A. Amri, Z.-T. Jiang, X. Zhao, Z. Xie, C.-Y. Yin, N. Ali, N. Mondinos, M. M. Rahman, and D. Habibi, "Tailoring the physicochemical and mechanical properties of optical copper–cobalt oxide thin films through annealing treatment," *Surface and Coatings Technology,* vol. 239, pp. 212-221, 2014.

Publications In International Journal

1. **Abhishek Singh**, R. Singh, T. Patel, G. Okram, A. Lakhani, V. Ganeshan, A. Ghosh, S. Jha, S. Patil, and S. Chatterjee, "Tuning of carrier type, enhancement of Linear magnetoresistance and inducing ferromagnetism at room temperature with Cu doping in Bi_2Te_3 Topological Insulators," *Materials Research Bulletin,* vol. 98, pp. 1-7, 2018.
2. **Abhishek Singh**, P. Shahi, A. Ghosh, J. Cheng, and S. Chatterjee, "Enhancement in power factor due to anti-correlation between electrical conductivity and thermoelectric power and induced magnetic ordering in high mobility Zn doped Bi_2Te_3 topological insulator," *Journal of Alloys and Compounds,* vol. 731, pp. 297-302, 2018.
3. **Abhishek Singh**, A. Ghosh, and S. Chatterjee, "Antiferromagnetic Ordering at Room Temperature in Co-Doped Sb_2Te_3 Topological Insulators," *Journal of Superconductivity and Novel Magnetism,* vol. 31, no. 2, pp. 299-305, 2018.
4. R. Singh, V. K. Gangwar, D. Daga, **Abhishek Singh**, A. Ghosh, M. Kumar, A. Lakhani, R. Singh, and S. Chatterjee, "Unusual negative magnetoresistance in $Bi_2Se_{3-y}S_y$ topological insulator under perpendicular magnetic field," *Applied Physics Letters,* vol. 112, no. 10, pp. 102401, 2018.
5. K. K. Shukla, A. Pal, **Abhishek Singh**, R. Singh, J. Saha, A. Sinha, A. K. Ghosh, S. Patnaik, A. Awasthi, and S. Chatterjee, "Hidden transition in multiferroic and magnetodielectric $CuCrO_2$ evidenced by ac-susceptibility," *EPL (Europhysics Letters),* vol. 118, no. 2, pp. 27008, 2017.

6. Distinguishing Bulk state from Surface state by simultaneous SdH and dHvA oscillations in $Sb_{1.90}Cu_{0.10}Te_3$ Topological Insulator, **Abhishek Singh**, V. K. Gangwar, R. Singh, P. Shahi, A. K. Ghosh, J.G. Cheng and S. Chatterjee (Under Review)
7. Giant mobility and large power factor in Zn doped Bi_2Te_3 Topological Insulators, **Abhishek Singh**, P. Shahi, J.-G. Cheng, A. K. Ghosh, S. Chatterjee (Under review)
8. High temperature spin-freezing transition in Pyrochlore $Eu_2Ti_2O_7$: A new observation from ac-susceptibility, A. Pal, **Abhishek Singh**, Anup K. Ghosh, S.Chatterjee (under Review)
9. Magnetic and Magneto-transport study of $Bi_2Cu_xTe_{3-x}$ (x=0, 0.03, 0.09) Topological Insulators, **Abhishek Singh**, V. K. Gangwar, R. Singh, S. Kumar, E. F. Schwier, K.Shimada, T.Matsumura, A. Lakhani, A. K. Ghosh, and S. Chatterjee (To be communicated)
10. Structural and Transport property of Zn doped Sb_2Te_3 Topologiocal Insulator, **Abhishek Singh**, P. Shahi, J.-G. Cheng, A. K. Ghosh, S. Chatterjee) (To be communicated)
11. Thermoelectric power, Electrical Conductivity and Magnetic analysis of Co doped Sb_2Te_3 Topological Insulator, **Abhishek Singh**, R. Singh, S. Kumar, P. Shahi, E. F. Schwier, K.Shimada, T.Matsumura, J.-G. Cheng, A. K. Ghosh, S. Chatterjee) (To be communicated)

12. Study of Structural, Thermopower and Magneto-transport Property of Cu doped Sb_2Te_3 Topological Insulator, **Abhishek Singh,** V. K. Gangwar, R. Singh, P. Shahi, A. K. Ghosh, J.G. Cheng and S. Chatterjee (To be communicated)

Conference proceeding

1. **Abhishek Singh,** A. Kumar, A. Pal, A. Tripathi, A. Tiwari, S. Chatterjee, Structural, Optical and Magnetic properties of $(Zn_{0.98}Mn_{0.02}O)$/Graphene nanocomposites, International conference on Nanotechnology for Better Living, NBL-2016, NIT Srinagar,(Vol.3,No.1,p.51doi:10.3850/978-981-09-7519-7nbl16-rps-51),2016.
2. A. Pal, **Abhishek Singh** and S.Chatterjee, Inducing ferromagnetism in pyrochlore $Eu_2Ti_2O_7$ by Fe and Mn doping and establishing ferroelectricity in $Eu_2Ti_2O_7$, International conference on Nanotechnology for Better Living, NBL -2016, NIT Srinagar (Vol. 3, No. 1,p.141,doi:10.3850/978-981-09-7519-7nbl16-rps-141) 2016.
3. A. Kumar, G.D. dwivedi, **Abhishek Singh**, R. Singh, K.K. Shukla, H.D. Yang, A.K. Ghosh and S. Chatterjee, Signature of Griffith phase in $(Tb_{1-x}Ce_x)MnO_3$, AIP Conference Proceedings 1731, 130060 (p.130060 (1-3) doi: 10.1063/1.4948166), 2016).

Poster presentation

1- **Abhishek Singh**, A. Kumar, S. Kumar, A. K. Ghosh, P. Maiti, S.Kumar, Sandip Chatterjee, Synthesis and Optical Properties of Functionalized Graphene-

$Zn_{0.98}Mn_{0.02}O$ Nanocomposite, International Conference on Frontiers of Spectroscopy –Dep. of Physics BHU- (Jan 10-12, 2015).

2- K. K. Shukla, P. Shahi, A. Kumar, R. Singh, **Abhishek Singh**, Gopal S, A.K. Ghosh, A. K. Nigam, A. Das, S. Chatterjee, Neutron diffraction of Credenrite $CuMn_{1-x}Fe_xO_2$ (with x=0, 0.05), 5^{Th} conference on neutron scattering-BARC Mumbai- (Feb2-4, 2015).

3- **Abhishek Singh**, A. Kumar, S. Kumar, A. K. Ghosh, P. Maiti, S.Kumar, Sandip Chatterjee, Synthesis and Characterization of Functionalized Graphene-$Zn_{0.98}Mn_{0.02}O$/G Nanocomposite 2th national workshop on advanced ceramic and nanotechnology(Theme Electroceramics), Dep. of Ceramic Engineering and Technology, IIT-(BHU)Varanasi, (Dec 4-5, 2015).

4- **Abhishek Singh**, Shiv Kumar, Arkadeb Pal, A. K. Ghosh, Sandip Chatterjee,Synthesis and Characterization of $Zn_{0.96}Fe_{0.04}O$/Graphene nano-composites International Conference on" Advances in Biological Systems and Materials Science in Nano World" ICABSMSN- Dep. of Physics, IIT-(BHU)Varanasi, (Feb 19-23, 2017).

5- **Abhishek singh**, A. Pal , A.K. Ghosh, S. Chatterjee, Synthesis, Optical and Magnetic Characterization of ZnO / Graphene Nanocomposite, Fourth International Symposium on Semiconductors materials and devices(ISSMD), Jadavpur, Univeristy, Kolkata, (March 8-10, 2017).

6- **Abhishek Singh**, Rahul Singh, T. Patel, G. S. Okram, A. Lakhani, S. N. Jha and S. Chatterjee, Giant enhancement of linear magnetoresistance and inducing ferromagnetism at room temperature with Cu doping in Bi_2Te_3 Topological

Insulators"- 45th National Seminar on Crystallography, SMST, IIT-(BHU)Varanasi, (july 9-12, 2017).

7- **Abhishek Singh**, S. Kumar, E. F. Schwier, K. Shimada, T. Matsumura, A. Lakhani, A. K. Ghosh, and S. Chatterjee, Cu-doped Bi_2Te_3 Topological Insulators studied by Laser-based Angle-resolved Photoemission Spectroscopy and Magneto-transport, The 8^{th} International Symposium on Surface Science, Tsukuba, Japan (Oct 22-26,2017).

Oral Presentation

1- **Abhishek Singh**, Rahul Singh, V.K. Gangwar, A. Lakhani, T. Patel, G. S. Okram, V. Ganeshan, A. K. Ghosh and S. Chatterjee, Tuning of carrier type, Large magnetoresistance and room temperature ferromagnetism in Cu doped Bi_2Te_3 Topological Insulators, International Conference on" Advances in Biological Systems and Materials Science in NanoWorld" ICABSMSN, Dep. of Physics- IIT-(BHU)Varanasi, (Feb 19-23, 2017).

Workshop Attended

1- Workshop on Characterization and functionalization of nanomaterials (CFN-2015), Department of Physics, BHU, (March 9-13- 2015).

2- Workshop on Advanced nanomaterials characterization and applications (WANCA-2015), Department of Physics, BHU, (Nov2-8, 2015).

3- 20^{th} Symposium and workshop on Thermal analysis (Thermans 2016) (Jan 18-22, 2016) Department of Physics, IIT-(BHU)Varanasi, (Jan 18-22, 2016).