BRIEF BIODATA

Professor Tankeshwar Kumar

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Date of birth: 17th October 1963 in Haryana

Father Name: Late Sh Jesa Ram Sachdeva

Positions Held : **Teaching, Research and Administrative Experience (25 Years)**

UGC Professor of Physics, Panjab University, Chandigarh
Director, Computer Center, Panjab University (2005-2014)
Associate Dean, PTU, Jallandhar (2003)
Reader in Physics (1999 –2005)
Lecturer in Panjab University, Chandigarh (1995 - 1999)
Lecturer in H.P. University, Shimla (1993 -1995)
Research Associate (CSIR) Panjab University (1992-1993)
Post Doctoral Fellow, ICTP, Trieste, Italy (1991 -1992)

Qualifications: Ph.D (1990) PU, M.Sc (1985)Physics PU, B.Sc (1983),Matric (1979)

Expertise Condensed Matter Physics (25 years),
Nanotechnology(7 years).
Information Technology : e-Governance (9 years).
Education Administration/ Management (15 Years).
Inspection(PU), Accreditation and Assessments (NAAC) (8 yrs)

Adminstrative Experience:
Director 2005-2014
Dean, PTU, Jallandhar
Member of Senate, PU (2000-2006)

Achievements

A. International

- Post Doctoral Fellow ICTP, Trieste, Italy (Jan. 1991 to Jan. 1992)
- 80 Publications (see attached list)
- Awarded Associateship of ICTP, Italy from 1997- 2004
- Research Leader ICTP, Italy, July 1993 to Aug.1993
- Editorial Board Member of Int. Journal: World Cond. Matter Physics

Visits abroad: **10 visits to Europe and America**

B. National

- First UGC professor of India under FRP
- Member of UGC- NAAC peer team
- Three Research Projects by Govt. of India Agencies.
- Ten students have been guided for Ph.D.degree.
- Member, National Academy of Sciences India

Research Publications
(Dr. Tankeshwar Kumar)

Full Research Papers in Refereed Journals (Interntionl)

1. Role of Fluid-Wall Interaction at Nano-scale (Reena Devi, Sunita Srivastava, K. Tankeshwar) J.Chem.Phys. 143 (2) 24506, (2015).

2. Pressure and electric field-induced metallization in ZrX2 (X=S, Se, Te) Bilayers (Ashok Kumar, Haiying He, Ravindra Pandey, P. K. Ahluwalia and K. Tankeshwar) Physical Chemistry Chemical Physics 17, 19215, (2015),

3. Semiconductor-to-metal Phase Transition in Monolayer ZrS2: GGA+U Study (Ashok Kumar, Haiying He, Ravindra Pandey, P. K. Ahluwalia and K. Tankeshwar) In AIP Conference Proceedings, vol. 1665, p. 090016 (2015).

4. Statc and Dynamic effects of confinement on Diffusion (Reena Devi, Sunita Srivastava, K. Tankeshwar) Phys. Chem. Liq (2014) 636, **52**.

5. Longitudinal and Volume viscosity of fluid confined to nanochannel (Ishu Goyal, A.H. M Zaheri, Sunita Srivastava, and K.Tankeshwar) Phys. Chem. Liq. (2013).

6. Role of Triplet Correlations in anomalous self –diffusion coefficient (Gaganpreet, Sunita Srivastava, K. Tankeshwar) Chem, Phys. 2012.

7. Controlling Diffusion by Varying Width of Layers in Nano Channel (Ishu Goyal, Sunita Srivastava, K. Tankeshwar) Nano-Micro Letters 2012, 4(3), pp 154-157

8. Effect of Roughness of Confining Surface on Diffusive Motion of Fluid (K. Tankeshwar and Sunita Srivastava) Micro Nano Systems, **4**, 25-28 2012.

9. Mass dependence of Mutual Diffusion Coefficient: computer Simulation Study (Raman Sharma, K. Tankeshwar, S. Ranganthan) *Phys. Chem. Liq*. **49**, 206, 2011

10. Dynamics of fluids contained in Nano cube (Reena Devi, Sunita Srivastava, K.Tankeshwar) *Nano Biomedicine Engineering* **3** 47 (2011)

11. Flow of fluid in Nanotube with rectangular cross section (Reena Devi, Jyoti Sood, Sunita Srivastava and K.Tankeshwar) Microfluidics and Nanofluidics, 737, 2010

12. Effect of Mass on Shear Viscosity of Binary Fluid Mixture confined to Nanochannel (Roahn Kaushal, Sunita Srivastava and K.Tankeshwar) Int. Journ. Nanosci. **8 (**2009)

13. Dynamics of gelling liquids: Algebraic Relaxation: Sunit Srivastava, CN Kumar, K.Tankeshwar J.Phys: Condensed Matter **21** 335106 (2009).

14. Longutudinal and Bulk Viscosities of Binary Fluid Mixture(AHM Zaheri, Sunita Srivastava, K.Tankeshwar) Euro. Phys. Jour. B (published 5th March 2008)

15. Dynamical model for restricted diffusion in Nano Channels (**K. Tankeshwar** and Sunita Srivastava) ***Nanotechnology*** **18** 485714 (2007)

16. Dynamical Structure Factor of Liquid Li, Na and Al, Shaminder Singh, Jyoti Sood and **K. Tankeshwar**, J. Non. Cryst. Solid **353**, 3134 (2007) .

17. Theoretical Evaluation of Bulk Viscosity : Relaxation Time (A.H.M. Zaheri, Sunita Srivastava, **K. Tankeshwar**) Phys. Rev. E **76** 041204 (2007)

18. Anisotropic Diffusion of a fluid confined to different geometries at nano-scale, Neha Aggarwal, Jyoti Sood and **K. Tankeshwar**, ***Nanotechnology (UK)*** **18** 335707 (2007)

19. The heat current density correlation function: sum rules and thermal conductivity, Shaminder Singh, K.Tankeshwar, K.N. Pathak and S.Ranganathan *J. Phys.: Condens. Matter* 18 No 4 (2006) 1395-1401

20. Transport properties of expanded rubidium: Potential Dependence, Raman Sharma and K.Tankeshwar Phys.Chem. Liq. **44,** 387, (2006)

21. Many body Correlations versus mode-coupling effects in dynamics of dense gases Puneet Sharma and K.Tankeshwar, Phys.Rev. E **72**, 051204 (2005)

22. Dynamical Correlations in coupled electron-electron and electron hole quantum wire (L.K. Saini, **K.Tankeshwar**, and R.K. Moudgil) Phys.Rev.B. **70** 075302 (2004)

23. Reply to comments on "Collective density excitations in liquid Li,Na and Al" Shaminder Singh and **K. Tankeshwar** Phys.Rev.E **70**, 013202 (2004)

24. Role of Many body correlations in liquids, P. Sharma, **K.Tankeshwar**, K. N. Pathak and S.Ranganathan, Phys.Rev. E **70,** 051202, (2004)

25. Collective density excitations in liquid Li,Na and Al. ,Shaminder Singh and **K. Tankeshwar** Phys.Rev.E 012201 (2003)

26. Shear Viscosity of Binary Fluids: Mass Dependece, Rohan Kushal and **K. Tankeshwar** Phys.Rev. E 011201(2003)

27. Binary and Multiparticle Contributions to the Velocity autocorrelation function (Puneet Sharma, **K.Tankeshwar**, K.N. Pathak and S.Ranganathan) Phys.Rev.E 021202 (2003)

28. Derivation of Memory Function from Mori's Equation (Shaminder Singh, Sunita Srivastava, C.N. Kumar and **K.Tankeshwar**) Phys.Chem. Liq. **41**, 567 (2003)

29. Longitudinal and bulk viscosity of expanded Rubidium (A.H. M. Zaher, Sunita Srivastava, **K.Tankeshwar**) J.Phys.: Condens. Matter, 6683 (2003)

30. Current Correlation Function of ideal Fermi Gas at Finite Temperauture, .R.P. Kaur, **K.Tankeshwar**, and K.N. Pathak, Parmana 2002, 703-711

31. Sech$^{\square}$(bt) form of the memory function, Shaminder Singh, C.N. Kumar and **K.Tankeshwar** Modern Physics Letter B **19** 739 (2002)

32. Wave Vector dependent shear viscosity of expanded Rb, Saroj K. Sharma and **K.Tankeshwar** Indian J.Phys. 47A 329 (2000).

33. Collective Modes in Liquid Metals, Saroj K. Sharma and **K. Tankeshwar** JPAS Vol.2, 289 (2000)

34. Self-diffusion in Isotopic Fluid, Raman Sharma, **K. Tankeshwar** and K. C. Sharma Phys.Rev. E **59** 460 (1999)

35. Estimation of Bulk Viscosity of Expanded Rb, Sunita Srivastava and **K.Tankeshwar**, Phys. Chem. Liq **37** 351 (1999)

36. Coupled Charged Bose Quantum Wires, R.K. Moudgil, **K.Tankeshwar** , K.N. Pathak and S.Ranganathan, J.Phys. Condensed Matter **11,** 3413 (1999).

37. A Molecular Dynamics Study of Cesium Along Vopur Pressure Curve, S. Ranganathan, **K. Tankeshwar** and K.N. Pathak, Phys.Chem.Liq. **37,** 237 (1999)

38. Ground State Correlations in a Charged Bose Quantum Wire, R.K.Moudgil , **K.Tankeshwar** and K.N.Pathak , J.Phys.:Condens. Matter 11 4665 (1999).

39. Sum Rules and Density Response of a 2D charged Bose Fluid, R. K. Moudgil **K. Tankeshwar** and K.N. Pathak, Phys. Chem. Liq. **37** 89 (1999)

40. Binary collision contribution to transverse current correlation function of dense fluids, Rajneesh K. Sharma, **K. Tankeshwar**, K.N.Pathak , S. Ranganathan and R.E. Johnson, *J.Chem.Phys***. 108**, 2919 (1998)

41. Inverse Shear Viscosity(fluidity) Scaled with melting point properties: Almost Universal Behaviour of Heavier Alkali Metals, **K.Tankeshwar** and N.H.March, Phys. Chem. Liq. (1998)

42. Dynamical Correlations in Charged Bose gas, **K.Tankeshwar**, B.Tanatar and M.P. Tosi, Phys.Rev.B **57** 8854 (1998)

43. Mutual Diffusion in Binary System Raman Sharma and **K.Tankeshwar** J.Chem.Phys. **108** 2601 (1998)

44. Binary collision contribution to longitudinal current correlation function of dense fluids-Numerical Results, K.N.Pathak , S. Ranganathan and R.E.Johnson, Rajneesh K. Sharma, **K.Tankeshwar** Phys. Rev. E. **57** 6195 (1998).

45. Propagation of collective modes in liquid cesium, Rajneesh K. Sharma and **K. Tankeshwar** *Phys.Rev.**E*** **55,** 564 (1997)

46. Static and Dynamical Properties of two dimensional charged bose fluid, R.K.Moudgil, P.K.Ahluwalia, **K. Tankeshwar** and K.N.Pathak , *Phys.Rev.**B*** **55** 544 (1997)

47. Binary collision contribution to longitudinal current correlation function, Rajneesh K. Sharma, **K. Tankeshwar**, K.N.Pathak , S. Ranganathan and R.E.Johnson, *Phys. Rev. E* **55** 1550 (1997)

48. Ionic Diffusion in $K_x(KCl)_{(1-x)}$, Raman Sharma and **K. Tankeshwar** *J.Phys.: Condensed Matter* **9**, 6191 (1997)

49. Shear Viscosity of Expanded Rubidium, Saroj K. Sharma and **K. Tankeshwar** *J.Phys: Condensed Matter* **9** 6185 (1997)

50. Relation between electrical and thermal conductivity in charged condensed phases, **K. Tankeshwar** , N.H.March, *Phys.Chem. Liq.* **31**, 39 (1996)

51. Model for self diffusion coefficient, Raman Sharma and **K. Tankeshwar** , *Phys. Chem. Liq*.**32** , 225 (1996)

52. Dynamical Structure factor of a two dimensional electron gas, R. K. Moudgil, P. K. Ahluwalia and **K. Tankeshwar**, *Phys.Rev. B* **54** , 8809 (1996)

53. Time Correlation functions of classical fluids: A self consistent approach, Rajneesh K.Sharma, R.K.Moudgil and **K.Tankeshwar**, *Phys.Rev. E* **54** 3652(1996)

54. Longitudinal and bulk viscosities of Lennard Jones fluids **K. Tankeshwar**, K.N.Pathak and S.Ranganathan *J.Phys.: Condensed Matter* **8** , 10847(1996)

55. Self-diffusion coefficient of expanded rubidium, Saroj K. Sharma and **K. Tankeshwar** *J.Phys.: Condensed Matter* **8**, 10839 (1996)

56. Binary collision contribution to transverse current correlation function, Rajneesh K.Sharma, **K. Tankeshwar**, K.N.Pathak and S.Ranganathan, Materials Science Fourum **223 -224** 23 (1996)

57. Realization of hyperbolic secant memory function, **K. Tankeshwar** and K.N. Pathak, *J.Phys.:Condensed Matter* **7**, 5729 (1995)

58. Collective density excitation in liquid Cs, **K. Tankeshwar**, S. Ranganathan and K.N.Pathak, *Phys. Chem. Liq*. **30**, 95 (1995)

59. Mass dependence of self diffusion in isotopic fluids, **K. Tankeshwar** , *J.Phys. :Condensed Matter* **7** 9715 (1995)

60. Analytical solution of Mori's equation with hyperbolic secant memory, **K. Tankeshwar** and K.N.Pathak, *J.Phys.: condens. Matter* **6** , 591, (1994)

61. Generalized negative bulk viscosity of liquids, **K. Tankeshwar** , *J.Phys. Condens. Matter* **6** 9295 (1994)

62. Transport coefficient of classical dense fluids: A simple approach, Rajneesh K. Sharma, **K. Tankeshwar** and K.N. Pathak, *J.Phys.: Condensed Matter* **7,** 537 (1994)

63. Self diffusion coefficient and force auto correlation function, Rajneesh K. Sharma, **K. Tankeshwar** and K.N. Pathak, *Phys. Chem.Liq***. 29** 59 (1994)

64. Tracer diffusion in simple liquids, **K. Tankeshwar** and F. O. Kaddour, *J. Phys. : Condenns. Matter* **4,** 3349(1992).

65. Theory of Chemla effect in Li(K)Cl, **K.Tankeshwar** and M.P.Tosi, Solid State Communication **84,** 1/2, 245(1992

66. The deviation of pair potential from the potential of mean force in molten Na near Freezing, **K. Tankeshwar** and N.H.March, Phys. Chem. Liq., **25** 59 (1992)

67. A simple model for the calculation of self diffusion, **K. Tankeshwar**, B. Singla and K.N.Pathak, *J. Phys. Condens. Matter*, **3,** 3173-3182(1991).

68. Self diffusion on isotopic fluids, **K.Tankeshwar**, *Phys. Chem. Liq***. 24**, 21(1991).

69. On the ionic equilibrium between complexes in molten fluoroaluminates, Z.Akdeniz, **K. Tankeshwar** and M.P. Tosi, *Phys. Chem Liq*. **23** , 259-263(1991).

70. Ionic diffusion in superionic-conductor melts, **K. Tankeshwar** and M.P.Tosi, *J.Phys. :Condensed Matter* **3**, 7511(1991).

71. Bulk viscosity and relations between transport coefficient, **K. Tankeshwar** *Phys. Chem. Liq.* **24**, 91(1991).

72. Ionic diffusion in the double layer at model electrode/molten salt interface,

K. Tankeshwar and M.P.Tosi, J. Phys, : Condens. Matter **3,** 9817(1991).

73. Velocity auto-correlation function in 2-dimensional classical electron fluid, B.Singla, **K. Tankeshwar** and K.N. Pathak, *Phys.Rev. A* **41**, 4306-4311(1990).

74. Theory of transport coefficient of simple fluids, **K. Tankeshwar**, K.N.Pathak and S. Ranganathan, *J. Phys. : Condens. Matter* **2**, 5891-5905(1990).

75. Dynamical structure factor fluid Ar, **K. Tankeshwar**, K.N. Pathak and S. Ranganathan, *Phys. Chem. Liq***. 22**, 75-88(1990).

76. Energy current density correlation function -I Frequency sum rules, **K.Tankeshwar**, K.N. Pathak, and S. Ranganathan *J. Phys. : Condens. Matter* **1**, 6193-6202 (1989).

77. Energy current density correlation function-II Thermal Conductivity, **K. Tankeshwar,** K.N.Pathak, S. Ranganathan, *J. Phys. : Condens. Matter* **1**, 6193-6202 (1989).

78. Shear Viscosity of Lennard Jones fluids, **K.Tankeshwar**, K. N. Pathak, and S. Ranganathan, *J.Phys. C: Solid State Phys*., **21**, 3607-3617 (1988).

79. Collective density excitations in liquid Aluminium, **K. Tankeshwar**, G.S.Dubey and K.N.Pathak, J. Phys. C. : Solid State Phys. **21** , L811-814(1988).

80. Self diffusion coefficient of Lennard Jones Fluids, **K.Tankeshwar** , K. N. Pathak and S. Ranganathan, *J. Phys. C: Solid State Phys*. **20,** 5749-5757 (1987).

Review Article/chapter in books

81. Transport properties of Colloids in bulk and in confinement at Nanoscale (Gaganpreet, Sunita Srivastava and K. Tankeshwar). Chapter in book (Nova Publishers, USA) 2015 in press
82. Restricted flow in Nano-Channels
(K. Tankeshwar,, Sunita Srivastava and Jyoti Sood, **Nanotechnology Research Progress,** Editor Julian F. Vogel and Felix T. Jung (Nova Publishers. New York, 2009)
83. Dynamical correlation function and transport coefficient of dense fluids, K.N.Pathak and **K. Tankeshwar** "Correlation in Electronic and Atomic Fluids" (Editors: P.Jena, R.Kalia, P.Vashishta and M.P.Tosi), World Scientific Press, (1990).

84. Binary Cluster Dynamics of Fluids, K.N. Pathak and **K. Tankeshwar** in Condensed Matter Physics, edited by B.K. Aggarwal and Hari Prakash (Narosa Publishing House) 289 (1999).

85. Computer Simulations in Physics, **K. Tankeshwar** (Narosa Publishing House) edited by I.M.Govil and Rajeev K. Puri, 246 (2003)