

## **PROF. RANJAN DEY, FRSC, FICS, MNASc.,**

Dept. of Chemistry, BITS PILANI K K BIRLA GOA CAMPUS, GOA INDIA-403726.

### **PUBLICATIONS**

1. **Predictive, correlative and machine learning models for estimation of viscosity of liquid mixtures**, Aditi Prabhune, Archana Mathur, Snehanshu Saha, Ranjan Dey, *Journal of Molecular Liquids*, 397, 124147 (2024).  
<https://doi.org/10.1016/j.molliq.2024.124147>
2. **Green and Sustainable Solvents of the Future : Deep Eutectic Solvents**, Aditi Prabhune, **Ranjan Dey**, *Journal of Molecular Liquids*, 379, 121676 (2023).  
<https://doi.org/10.1016/j.molliq.2023.121676>
3. **Physicochemical Behaviour of 2-Pentanone + Amine Mixtures at three temperatures**, Aditi Prabhune, Akanksha Saini, **Ranjan Dey**, *Journal of Indian Chemical Society*, 100,101031(2023).  
<https://doi.org/10.1016/j.jics.2023.101031>
4. **Thermophysical Properties of 2-Pentanone and 2-Heptanone + Aromatic Amines at Three Different Temperatures**, Aditi Prabhune, **Ranjan Dey**, *Int. Conf. Advanced. Mater. Sci. & Eng. HiTech. and Device Appl.*, **28-31(2022)**. Invited Paper.
5. **Dey-Biswas Equation is Highly Effective for Viscosity Prediction of Binary and Multicomponent Liquid Mixtures Including Ionic Liquid Mixtures**, Aaditi Basarkar, **Ranjan Dey**, *Journal of Molecular Liquids*, 367 120457 (2022).  
<https://doi.org/10.1016/j.molliq.2022.120457>
6. **Thermophysical Properties of Alkanone + Aromatic Amine Mixtures at Varying Temperatures**, Aditi Prabhune, Amrita Natekar, **Ranjan Dey**, *Frontiers in Chemistry: Physics Chemistry & Chemical Physics*, 10, 868836, 2022.  
<https://doi.org/10.3389/fchem.2022.868836>
7. **Volume fraction-based Hind-Ubbelohde approach predicts viscosity with higher accuracy**, Amrita Natekar, **Ranjan Dey**, *Journal of Molecular Liquids*, 350,118526 (2022). <https://doi.org/10.1016/j.molliq.2022.118526>
8. **A Comparative Study of bioelectrical systems with established anaerobic/ aerobic processes**, **Ranjan Dey**, Dileep Maarisetty, Saroj Sundar Baral, *Biomass Conversion and Biorefinery*, <https://doi.org/10.1007/s13399-021-02258-3> (2022).

9. **Voltammetric and Spectroscopic studies of Memantine Hydrochloride and its Transition Metal Complexes**, Amrita Natekar and **Ranjan Dey**, *Physical Chemistry Research*, 10(1), 13-21(2022). <https://doi.org/10.22036/pcr.2021.289298.1923>
10. **Viscometric Properties of Binary Mixtures of 1, 4- Butanediol + Cresols at Different Temperatures**, J.V. Srinivasu, K. Narendra, Ch. Kavitha, **Ranjan Dey**, *Physical Chemistry Research*, 9(4), 2021. <https://doi.org/10.22036/pcr.2021.270810.1880>
11. **A Fresh look at the Hind Ubbelohde approach: Simple yet effective modification**, Sanyukta Jain, **Ranjan Dey**, *Journal of Molecular Liquids*, 333, 115919 (2021). <https://doi.org/10.1016/j.molliq.2021.115919>.
12. **Comparative study of viscosity, diffusion coefficient, thermal conductivity and Gibbs free energy for binary liquid mixtures at varying temperatures**, Charu Kandpal, J.D. Pandey, **Ranjan Dey**, Arvind Kumar Singh, Vinod Kumar Singh, *Journal of Molecular Liquids*, 333, 115858 (2021). <https://doi.org/10.1016/j.molliq.2021.115858>
13. **Density, Ultrasonic velocity, Viscosity, Refractive Index and Surface Tension of aqueous Choline Chloride with Electrolyte solutions**, Akanksha Saini, Aditi Prabhune, A.P. Mishra, **Ranjan Dey**, *Journal of Molecular Liquids*, 323, 114593(2021). <https://doi.org/10.1016/j.molliq.2020.114593>
14. **Understanding of molecular interactions between Ethyl Acetate and 1-Butyl-3-methyl-imidazolium bis(trifluoromethylsulfonyl)imide: A Thermophysical study**, P V SS Rama Rao, Srinivasa Krishna Tadikonda, P. Bharat, **Ranjan Dey**, D. Ramacharan, *Journal of Chemical Thermodynamics*, 156, 106383 (2021). <https://doi.org/10.1016/j.jct.2020.106383>
15. **A reliable and novel approach based on Thermodynamic property estimation of Low to High Salinities Aqueous Sodium Chloride Solutions for Water Energy Nexus (WEN) applications**, Lubna Rehman, **Ranjan Dey**, Lai Zhiping, Asim Ghosh, Anirban Roy, *Industrial & Engineering Chemistry Research*, 59 (36), 16029-16042(2020). <https://doi.org/10.1021/acs.iecr.0c02575>
16. **Performance Evaluation of Wind - Solar Hybrid System in Indian Context**, Rahul Shityalkar, **Ranjan Dey**, Anagha Pathak, Niranjan Kulhare, Sandesh Jadkar, *Springer Nature*, [doi.org/10.1007/978-981-15-5955-6\\_22](https://doi.org/10.1007/978-981-15-5955-6_22); (2020).
17. **Densities, Viscosities and excess parameters of octanol with alkyl(C1-C4) acetates at varying temperatures**, D. Venkatesan, Joshua Amarnath D., T. Srinivasa Krishna, Piyashi Biswas, **Ranjan Dey**, *Journal of Molecular Liquids*, 299(2020)11221. <https://doi.org/10.1016/j.molliq.2019.112221>

18. **Molecular Interaction studies in binary mixtures of tetrahydrofuran with arene substituted alcohols: acoustic and volumetric study**, A. Shakila, T. Srinivasa Krishna, **Ranjan Dey** and V Pandiyan, *Physics Chemistry of Liquids*, 58(2),267-279(2020). <https://doi.org/10.1080/00319104.2018.1564752>
19. **Molecular Interaction studies based on transport, thermodynamic and excess properties of aniline and alkanol mixtures at varying temperatures**, M. Swetha Sandhya, Piyashi Biswas, N.R. Vinay, K. Sivakumar, **Ranjan Dey**, *Journal of Molecular Liquids*, 278, 219-225 (2019). <https://doi.org/10.1016/j.molliq.2019.01.056>
20. **Estimation of effective Debye Temperature of multicomponent liquid mixtures**, Charu Kandpal, Arvind Kumar Singh, **Ranjan Dey**, Vinod Singh and Devraj Singh, *Indian Journal of Pure and Applied Ultrasonics*, 41(1), 19-23,(2019).
21. **A Novel and effective approach for viscosity prediction of binary and multicomponent liquid mixtures**, **Ranjan Dey** and Piyashi Biswas, *Journal of Molecular Liquids*, 265, 356-360 (2018). <https://doi.org/10.1016/j.molliq.2018.06.012>
22. **Acoustical and Optical properties of binary liquid mixtures: A Comparative Study**, **Ranjan Dey**, Praveen Rangnath P., Kartikeya Tiwari and Aditya P Pandey, *Indian Journal of Chemistry-A*, 57 A, 920-925(2018).
23. **Molecular interactions in binary mixtures of 1,4 butanediol + picoline: Viscometric approach**, J V Srinivasu, K Narendra, **Ranjan Dey**, G Srinivasa Rao and B Subba Rao, *Indian Journal of Chemistry-A*, 56 A, 1156-1160(2017).
24. **Host-guest interaction between corannulene and  $\gamma$ -cyclodextrin: Mass spectrometric evidence of a 1:1 inclusion complex formation**, Hrishikesh Joshi, Sivaramapanicker Sreejith, **Ranjan Dey** and Mihaiela C. Stuparu, *RSC Advances Communications*, 6, 110001-110003(2016). <https://doi.org/10.1039/C6RA24549H>
25. **Two new models for viscosity prediction of binary, ternary and higher order liquid mixtures**, Akanksha Saini, Shahswat Verma, Aditya Harshavardhan and **Ranjan Dey**, *RSC Advances*, 6, 113657–113662(2016). <https://doi.org/10.1039/C6RA24532C>
26. **A study of Viscometric, optical and interfacial properties of binary and ternary liquid mixtures**, Akanksha Saini, Hrishikesh Joshi, Kratika Kukreja and **Ranjan Dey**, *Journal of Molecular Liquids*, 223,165-173(2016). <http://dx.doi.org/10.1016/j.molliq.2016.08.046>

27. **Thermophysical and optical studies of molecular interactions in binary mixtures of diethyl carbonate with aromatic compounds at temperatures from 298.15K to 323.15K**, K Narendra, T Srinivasa Krishna, B Sudhamsa, **Ranjan Dey** and M Sarath Babu, *Journal of Chemical Thermodynamics*, 103,17-29(2016).  
<https://doi.org/10.1016/j.jct.2016.08.001>
28. **A Modified Frenkel Approach for Viscometric Prediction of Binary and Multicomponent Liquid Mixtures**, **Ranjan Dey**, Akanksha Saini and Hardik Hingorani, *RSC Advances*, 6, 43838-43(2016). <https://doi.org/10.1039/C6RA08960G>
29. **Theoretical Evaluation of Speed of Sound in Binary Liquid Mixtures**, J V Srinivasu, K Narendra, **Ranjan Dey**, B Subba Rao, *International Journal of Advanced Research in Physical Sciences*,3(6),7-14(2016). <https://doi.org/10.13005/ogc/390213>
30. **Viscometric Investigation of Binary, Ternary and Quaternary Liquid Mixtures: Comparative evaluation of Correlative and Predictive models**. **Ranjan Dey**, Aditya Harshavardhan and Shashwat Verma, *Journal of Molecular Liquids*, 211, 686-694 (2015). <https://doi.org/10.1016/j.molliq.2015.07.042>
31. **Acoustical, thermophysical and excess properties of binary and higher order multicomponent liquid mixtures**, **Ranjan Dey**, Karan S. Raghuvanshi and Aditya Harshavardhan, *IJSR*,251-257(2015).<http://www.ijsr.net/conf/ISU-2015/ISU-055.pdf>
32. **Influence of alkyl group and temperature on excess thermodynamic properties of diethyl carbonate and their binary mixtures at 0.1MPa**. M. Srilakshmi, K. Narendra, T. Srinivasa Krishna, **Ranjan Dey** and A. Ratnakar, *Journal of Molecular Liquids*, 211, 854-867, (2015). <https://doi.org/10.1016/j.molliq.2015.07.055>
33. **Estimation of some important thermodynamic and thermophysical and properties of ternary liquid mixtures from ultrasonic velocity and density data**, **Ranjan Dey**, Akanksha Saini, Ashish K Sharma, J.D. Pandey, *J. Mol. Liq.*, 195,150-156(2014).  
<https://doi.org/10.1016/j.molliq.2014.02.023>
34. **Design and Simulation of Portable Fuel Adulteration Detection Kit**, **Ranjan Dey** and Anumeha Dwivedi, *Journal of Energy and Chemical Engineering*, 2[2], 74-80(2014).
35. **A comparative study of Ultrasonic velocities of Binary and Multicomponent Liquid mixtures at 298.15 K**, **Ranjan Dey** and Aditya Harshavardhan, *Journal of Energy & Chemical Engineering*,2[1] 1-7 (2014).

36. **A Temperature variant Thermoacoustical approach for computation of excess non-linearity parameter and available volume of binary liquid mixtures**, **Ranjan Dey** and Pranjali Kumar, *Acta Acustica*, 96, 8-13(2011) <https://doi.org/10.3813/AAA.918381>
37. **Theoretical Estimation of Viscosity of Oxygenates with Quinary Hydrocarbon mixtures at 298.15 K**, **Ranjan Dey**, Prakash Chandra & J. D. Pandey, *International Journal of Innovations in Chemical and Biological Sciences*, 1,16-21(2011).
38. **Biogas Generation Potential by Anaerobic Digestion for Sustainable Energy Development in India**, S. S. Baral, P.V. Rao, **Ranjan Dey** and Srikant Mutnuri, *Renewable and Sustainable Energy Reviews*, 14(7),2086-2094 (2010). <https://doi.org/10.1016/j.rser.2010.03.031>
39. **Determination of Kirkwood–Buff integrals of multicomponent liquid systems from the speed of sound**, **Ranjan Dey**, Richa Verma, Tanuja Nautiyal, Nitya K Soni and J D Pandey, *Physics & Chemistry of Liquids*, 47:3, 287-295(2009). <https://doi.org/10.1080/00319100701785168>
40. **Study of excess thermodynamic properties of multicomponent liquid mixtures**, **Ranjan Dey**, Anjan Chattopadhyay, Ashish K Sharma and J. D. Pandey, *J. mol. Liq.*, 147, 155-161 (2009). <https://doi.org/10.1016/j.molliq.2009.03.001>
41. **A Temperature dependent Viscometric Studies of Binary Liquid Mixtures**, **Ranjan Dey**, A. K. Singh and J. D. Pandey, *Journal of Molecular Liquids* 137,88-91(2008). <https://doi.org/10.1016/j.molliq.2007.03.010>
42. **A study of Pb-Sn alloy at variable elevated temp. through prediction of ultrasonic velocities, excess parameters & molecular interaction parameter**, **Ranjan Dey**, Jyotsna Chhabra, S. K Shukla and J D Pandey, *J. Pure Appl. Ultrasonic*, 29, 111-113(2007).
43. **Estimation of Thermal Conductivity of Binary liquid mixtures employing new approach**, J. D. Pandey, **Ranjan Dey**, N. K. Soni, Prakash Chandra & Manoj, K Yadav, *Ind. J. Chem. Tech*, 14, 638-641(2007). <http://nopr.niscpr.res.in/handle/123456789/1186>
44. **A New Theoretical Approach for estimating Excess Internal Pressure**, **Ranjan Dey**, A. K Singh and J D Pandey, *Journal of Molecular Liquids*, 124,121-123(2006). <https://doi.org/10.1016/j.molliq.2005.09.005>

45. **Thermodynamic behaviour of ternary liquid mixtures: application of Flory statistical theory with modified expression of characteristic pressure**, J D Pandey, Rajesh Mishra and **Ranjan Dey**, *Journal of Molecular Liquids*,123(1),24-28(2006).  
<https://doi.org/10.1016/j.molliq.2005.02.005>
46. **Thermal conductivity of ternary liquid mixtures: Application of modified Flory statistical theory and uniform gaseous model**, **Ranjan Dey**, N. K. Soni, R.K. Mishra, V. Sanguri, J.D. Pandey, *Journal of Molecular Liquids*, 124,102-105(2006)  
<https://doi.org/10.1016/j.molliq.2005.10.004>
47. **Non-linearity parameter(B/A) of cycloalkanes at varying temperatures and pressures**, J D Pandey, **Ranjan Dey**, V Sanguri, N.K. Soni, M K Yadav and Niti Pandey, *J Ind. Chem. Soc.*, 83,649-651(2006).
48. **Modified Flory theory and pseudo spinodal equation of state for the evaluation of isothermal compressibility, isentropic compressibility, internal pressure and pseudo Grüneisen parameter of binary liquid mixtures at elevated pressure**, J.D. Pandey, **Ranjan Dey**, N. K. Soni, R. K. Mishra and D. K. Dwivedi, *Ind J Pure &Appl Ultrason* 28, 20-28(2006). <https://isolar.sscl.in/index.php/Ultrasonics/article/view/172768>
49. **Isotopic Effects on non-linearity, molecular radius and intermolecular free length**, **Ranjan Dey**, Arvind K Singh, N. K. Soni, B. S. Bisht and J. D. Pandey, *Pramana - journal of physics*. 67(2),389-394(2006).  
<https://www.ias.ac.in/article/fulltext/pram/067/02/0389-0394>
50. **Effect of Na<sup>+</sup>, K<sup>+</sup> and Ca<sup>++</sup> ions on physicochemical properties of Thymine, Cytosine, Thymidine, and Cytidine in Urea Solutions**, J. D. Pandey, Shahla Haroon, Jyotsna Chhabra, **Ranjan Dey** and Krishna Misra, *Chinese J. Chem*, 23,1157-1164(2005).  
<https://doi.org/10.1002/cjoc.200591157>
51. **An Ultrasonic Study of Multicomponent Liquid Systems**, J. D. Pandey, A. K. Singh and **Ranjan Dey**, *Ind J. Chem Tech.*, 12,588-592(2005).  
<http://nopr.nisrpr.res.in/handle/123456789/8676>
52. **A comparative study of non-linearity parameter for binary liquid mixtures**, J. D. Pandey, **Ranjan Dey**, Vinay Sanguri, Jyotsna Chhabra and T. Nautiyal, *Pramana-journal of physics*, 65(3),535-540(2005). <https://link.springer.com/article/10.1007/BF02704212>
53. **Novel Approach for the prediction of Ultrasonic velocity in Quaternary liquid mixtures**, J. D. Pandey, A. K. Singh, **Ranjan Dey**, *Pramana*, 64(1)135-139(2005).  
<https://link.springer.com/article/10.1007/BF02704537>

54. **Viscosity of multicomponent gas mixtures**, J D Pandey, S Mukherjee, M.K. Yadav and **Ranjan Dey**, *Ind. Chem. Soc.*, 82,39-41(2005).
55. **Estimation of molecular radius of liquids and liquid mixtures from sound velocity**, J. D. Pandey, **Ranjan Dey** and B. Datt Bhatt, *Journal of Molecular Liquids*,111,67-71(2004). [https://doi.org/10.1016/S0167-7322\(03\)00262-9](https://doi.org/10.1016/S0167-7322(03)00262-9)
56. **Excess functions of binary liquid mixtures at varying pressures**, J. D. Pandey, N. K. Soni, **Ranjan Dey** and Richa Verma, *Fluid Phase Equil.*, 215, 17-22(2004). <https://doi.org/10.1016/j.fluid.2003.06.004>
57. **Effect of isotopy on Thermoacoustical Properties**, J D Pandey, A K Singh and **Ranjan Dey**, *Ind J. of Pure & Appl. Ultrason.*, 26,100-104(2004).
58. **Excess thermodynamic parameters for the Pb - Sn alloy at various composition**, J D Pandey, S K Shukla, Jyotsna Chhabra and **Ranjan Dey**, *Ind. Chem. Soc.*81, 962-964(2004).
59. **Thermoacoustical approach to the intermolecular free length for multicomponent liquid mixtures**, J D Pandey, **Ranjan Dey** and J. Chhabra, *Phys. Chem. Comm*6(14), 55-58(2003). <https://doi.org/10.1039/B307435H>
60. **Thermodynamic Properties of Multicomponent Liquid Mixtures**, J D Pandey, **Ranjan Dey** and R Verma, *Phys. Chem. Liq.* ,14(2),145-153(2003). <https://doi.org/10.1080/0031910021000044465>
61. **Effective Debye temperature of liquid metal alloys and molten salt mixtures**, **Ranjan Dey**, R K Mishra, N.K. Soni and R C Mittal, *Univ. Alld. Stud. (New Mill. Ser.)*, 2(1),15-20(2003).
62. **Thermodynamic and thermoacoustical properties of liquid ethanol at varying temperature and pressures**, J. D. Pandey, V. Vyas, **R. Dey** and D. K. Dwivedi, *Ind. J. Chem.*, 39(A),993-996(2003).
63. **Applicability of thermoacoustical parameters for the computation of available volume in liquid systems**, J D Pandey, B D Bhatt and **Ranjan Dey**, *Phys. Chem. Comm.*, 5(6),37-39 (2002). <https://doi.org/10.1039/B109599D>

64. **Prediction of Heat of mixing from internal pressure data**, J D Pandey, N Tripathi, **R Dey** and D K Dwivedi, *Phys. Chem. Liq*,39(6),781-790(2001). <https://doi.org/10.1080/00319100108031693>
65. **Excess functions of multicomponent liquid mixtures**, J D Pandey, Richa Verma and **Ranjan Dey**, *Acoustic Letters*, 24(5), 94-100(2000).
66. **Excess internal pressure and excess pseudo-Gruneisen parameter of binary liquid mixtures**, J D Pandey and **Ranjan Dey**, *Acoustic Letters*, 24(5), 105-109(2000).
67. **Interaction of 6-aminopurine(adenine)in water and adenine in aqueous urea solutions**, J D Pandey, S Haroon, K Dubey, M Upadhyaya, **R Dey** & K Mishra, *Canad. J. Chem.*,78(12), 1561-1569(2000). <https://doi.org/10.1139/v00-141>
68. **Non-linearity parameter, B/A, of binary liquid mixtures at elevated pressures**, J D Pandey, J. Chhabra, **R Dey** V Sanguri & R Verma, *Pramana-journal of physics*, 55(3),433-439(2000). <https://doi.org/10.1007/s12043-000-0073-6>
69. **Evaluation of thermal conductivity of binary liquid mixtures**, J D Pandey, V Vyas, S Mukherjee & **R Dey**, *Indian Journal of Physics*, 74 A (3), 315-317(2000).
70. **Thermal conductivity of liquids and Flory's statistical theory**, J D Pandey & **R Dey**, *Indian Journal of Physics*, 74 A (3), 319-322(2000).
71. **Thermodynamic and thermoacoustic properties of liquid ethanol in temperature range from 380 to 460 K at pressures up to 190 MPa**, J D Pandey, Vimal Vyas, D K Dwivedi, **Ranjan Dey**, *Indian Journal of Chemistry*, 39 A, 993-996(2000) <http://nopr.niscpr.res.in/handle/123456789/26092>
72. **Thermodynamic and transport properties of tetracycline and allied compounds in aqueous and water + dioxane solution**, J D Pandey, N Hassan & **R Dey**, *Acoustic Letters* ,23(6),123-126(1999).
73. **Speed of sound, viscosity & refractive index of multicomponent system: Theoretical predictions from the properties of pure components**, J D Pandey, P Jain, V Vyas, G P Dubey, N Tripathi & **Ranjan Dey**, *Journal of Molecular Liquids*, 81, 123-133(1999) <https://doi.org/10.1139/v94-315>
74. **Ultrasonic velocity of binary systems at elevated pressures**, J D Pandey, **R Dey** & D K Dwivedi, *Pramana - journal of physics*, 52(2), 187-193(1999). <https://doi.org/10.1007/BF02831494>



75. **Non-linearity parameters,  $B/A$ , of pure liquids**, J D Pandey, V Sanguri & **R Dey**, *J. Int. Acad. Phys. Sci.*, 3(1-4)101-106(1999).  
<https://www.iaps.org.in/journal/index.php/journaliaps/article/view/721>
76. **Non-linearity parameter,  $B/A$ , of binary and multicomponent liquid mixtures**, J D Pandey, **R Dey** & M Upadhyaya, *Acoustic Letters*, 21(6), 120 -125(1997).
77. **Temperature and pressure dependence of thermoacoustical parameters of liquid Argon and Xenon**, J D Pandey, G P Dubey, **R Dey** & S. N. Dubey, *Acta Acustica*, 83, 90-92(1997).  
<https://www.ingentaconnect.com/content/dav/aaua/1997/00000083/00000001/art00017>
78. **Viscosity of multicomponent liquid systems**, J D Pandey, A K Shukla, **R Dey** & V Sanguri, *J Int. Acad. Phys. Sci.*, **1-2**, 97 -104(1997).  
<https://doi.org/10.1016/j.molliq.2007.03.010>
79. **Thermodynamic and thermoacoustical parameters of pure liquids at elevated pressures**, J D Pandey, N. Tripathi & **R Dey**, *Indian Journal of Physics***70B (2)**, 147 - 155(1996).