

## BIODATA OF PROFESSOR A.K. SOOD

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**Name** : **Professor Ajay K Sood**

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**Citizenship** : Indian

### Education :

B.Sc. Physics, Punjab University, Chandigarh, India, 1971.  
M.S. Physics, Punjab University, Chandigarh, India, 1972.  
Ph.D. Physics, Indian Institute of Science, Bangalore, India 1982.  
Post-doctoral: Max Planck Institute fur FKF, Stuttgart, Germany, 1983-1985.

### Professional Experience :

8/16 – Present	Honorary Professor Department of Physics, Indian Institute of Science, Bangalore.
7/94- 7/16	Professor Department of Physics, Indian Institute of Science, Bangalore.
12/98 – 3/08	Divisional Chairman Division of Physical and Mathematical Sciences, Indian Institute of Science, Bangalore, India
7/88- 7/94	Associate Professor Department of Physics, Indian Institute of Science, Bangalore. India
1993- Present	Honorary Professor Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, India
8/73 – 7/88	Scientist Indira Gandhi Centre for Atomic Research, Kalpakkam, India
2015 – 2017	Distinguished Honorary Professor Indian Institute of Technology, Kanpur

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**Service to the Profession:**

1. Chairman, Division of Physical and Mathematical Sciences, IISc (1998-2008)
2. Member, Scientific Advisory Council to the Prime Minister of India (2009-2014)
3. Member, Science and Engineering Research Board (SERB), GOI (2012-2014)
4. Chairman, Council, Raman Research Institute (2016-present)
5. Member, Governing Council, Centre for Nano and Soft Matter Sciences, Bangalore (2013-present)
6. Member, Board of Governors, Institute of Nano Science and Technology, Mohali (2012-present)
7. Member, Nanomission Council of DST, GOI
8. Chairman, Nano Science Advisory Group of DST
9. Member, Board of Governors of the Academy of Scientific and Innovative Research (AcSIR)
10. Member, Governing Body and the Society of the CSIR (2013-2016)
11. Member, Vision Group on Nanotechnology, Government of Karnataka (2014- )
12. Executive Editor, Solid State Communications, Elsevier
13. International Editorial Advisors Board, "Particle" (2012 - )
14. Co-Editor, Europhysics Letters (2012 - )
15. Chair, International Advisory Board, Winton Programme for the Physics of Sustainability (2015 - )
16. Member of Science, Technology and Innovation Advisory Council to the Prime Minister of India (2018 onwards)

**Honours and Recognitions:****a) Civilian Honours**

- 1) "Padma Shri" by Government of India (2013)

**b) Fellowships of Academies**

- 1) President, Indian National Science Academy (2017-2019)
- 2) Fellow of the Royal Society, London (FRS) (2015)
- 3) Secretary General, The World Academy of Sciences (2013-2018)
- 4) President, Indian Academy of Sciences (2010-2012)
- 5) Vice President, Indian National Science Academy (2008-2010)
- 6) Fellow of Indian Academy of Sciences (FASc) (1991)
- 7) Fellow of Indian National Science Academy (FNA) (1996)
- 8) Fellow of The World Academy of Sciences (FTWAS) (2002)
- 9) Fellow of The National Academy of Sciences, India (FNASc) (1995)
- 10) Member, The Asia-Pacific Academy of Materials (2008)
- 11) Honorary Fellow, Indian Association for Cultivation of Science (Kolkata) (2016)

**c) Honorary Degrees**

- 1) Doctor of Science, Honoris Causa, Indian Institutes of Science Education and Research, Bhopal (2016)
- 2) Doctor of Science, Honoris Causa, Indian Institute of Technology, Kanpur (2017)
- 3) Doctor of Science, Honoris Causa, Jadavpur University, Kolkata (2017)
- 4) Doctor of Science, Honoris Causa, Cooch Behar Panchanan Barma University, Cooch Behar-736101, West Bengal (2017)

**d) Awards**

- 1) Third World Academy of Sciences (TWAS) Award in Physics (2000)
- 2) G.D. Birla Science Award (2000) (*Given annually by a major national foundation to a scientist below the age of 50 yrs, chosen amongst all areas of science and engineering*)
- 3) FICCI (Federation of Indian Chambers of Commerce and Industry) Award in Physical Sciences (1999-2000)
- 4) The Homi Jehangir Bhabha Medal of Indian National Science Academy (2002)
- 5) Materials Research Society (India) Medal (2000)
- 6) Millennium Gold Medal of Indian Science Congress (2000)
- 7) IISc Alumni Award for Excellence in Research for Science (2003)
- 8) M.N. Saha Birth Centenary Award (Indian Science Congress) (2003-2004)
- 9) Sir C.V. Raman Award: Physical Sciences (Hari Om Ashram Trust/University Grants Commission) (2003)
- 10) Goyal Prize in Physics (2003)
- 11) DAE Raja Ramanna Award of Jawaharlal Nehru Centre for Advanced Scientific Research (2005)
- 12) National Award in Nanoscience and Nanotechnology (*Department of Science and Technology, Government of India*), (2006)
- 13) Lifetime achievement award of Punjab University, Chandigarh (2006)
- 14) Bhatnagar Fellowship of Council of Scientific & Industrial Research (2007)
- 15) Vigyan Ratan Award of Punjab University, Chandigarh (2010)
- 16) H.K. Firodia Award in Science & Technology (2010)
- 17) Bangalore Nano Award by Government of Karnataka (2010)
- 18) G.M. Modi Award for Science (2012)
- 19) Indian Science Congress Award for outstanding contributions to Science (2014)
- 20) R.D. Birla Award for excellence in Physics-2012 by Indian Physics Association (2014)
- 21) Distinguished Alumni Award 2016 of IISc jointly with IIScAA (2016)
- 22) Life time achievement award by Optical Society of India (2016)
- 23) MRSI Distinguished Materials Scientist of the year award (2016)
- 24) Vigyan Ratan by BabaSaheb Bhimrao Ambedkar University, Lucknow (2017)

**e) Award Lectures: (only a few are mentioned)**

- 1) Platinum Jubilee Lecture of Indian Science Congress (1998)
- 2) Prof. K. Rangadhama Rao Memorial Award Lecture of Indian National Science Academy (2000)
- 3) Brahm Prakash Memorial Lecture of Indian Institute of Metals, Kalpakkam Chapter (2003)
- 4) J.W. McBain Award Lecture of National Chemical Laboratory - Pune (2004)
- 5) A.V. Rama Rao Award Lecture of Indian Association of Cultivation of Science, Kolkatta (2004)
- 6) Platinum Jubilee Lecture of Indian Science Congress (2008)
- 7) Prof. Meghnad Saha Memorial Lecture Award of The National Academy of Sciences, India (2009).
- 8) DAE-CV Raman Lecturer of Indian Physics Association (2010-11)
- 9) Erudite Scholar, M.G. University, Kottayam, July 2011
- 10) D.M. Bose Memorial Lecture, 2016 (Bose Institute, Kolkata)

**Patents:**

- 1) Carbon Nanotubes flow sensor and energy conversion device (2001). (Patent with Mr. Shankar Ghosh) – US. Patent No. 6,718, 834 (granted on 13-4-2004).
- 2) Method for measurements of Gas Flow Velocity, method for energy conversion using gas flow over solid material, and device thereof. (Patent applied with S. Ghosh) US Patent no. 7,302.845B2, (dt. Dec.4, 2007). Patent filed in 7 countries.
- 3) Accelerometer based on Nanotubes. A. K. Sood, Anindya Das and Shankar Ghosh. Indian patent filed. (Application No. 663/CHE/2005)
- 4) Vibration Sensor based on Nanotubes. A.K. Sood, Anindya Das and Shankar Ghosh. Indian patent filed. (Application No. 664/CHE/2005)
- 5) An ultra-sensitive assay for detection and Quantification of a substance. A. K. Sood and Ajay Singh Negi. Indian Patent. (Application No. 1324/CHE/2005). International PCT Application no. PCT/IN 2006/000369.
- 6) Ge-Te-Si Glasses for phase change random access memory (PC RAM) applications, K.K. Singh, N.M. Krishna, O. Nalamasu, S. Asokan, M. Anbarasu, A.K. Sood and S. Prusty, International PCT filed.
- 7) Optical biosensors having enhanced sensitivity. K.S. Vasu, Sridevi S, N. Jayaraman, S. Asokan, A.K. Sood. Indian patent filed. (Application No. 719/CHE/2013)

**Publications:**

400

**Research Activities:****1. *Hard Condensed Matter:***

*Raman Spectroscopy:* Nanotubes, Graphene, Fullerenes, strongly electron correlated oxides, geometrically spin frustrated pyrochlores, Semiconductor superlattices, Raman scattering under ultra high pressures using diamond anvil cell.

*Time resolved spectroscopy:* Degenerate and non-degenerate pump-probe spectroscopies, Transient absorption spectroscopy, Time-resolved terahertz spectroscopy. Photon Control of ionic motion using femtosecond lasers: squeezed phonons and coherent phonons, Nonlinear optical properties.

*Brillouin Scattering:* Semiconductors, Manganites, CDW systems, geometrically spin frustrated Pyrochlores, Nanotubes.

*Transport:* Fluid flow induced voltage generation in Nanotubes and semiconductors, Nanotube and graphene based field effect transistors.

**II. *Soft Condensed Matter:***

Colloids and surfactant based systems, complexes of DNA with surfactants.

*Active Granular Matter:* Flocking, Sorting, Bacteria based active systems for Heat engines

*Experimental studies:* Dynamic light scattering, Digital optical microscopy, Coherent x-ray and small angle x-ray scattering, x-ray fluorescence correlation spectroscopy, colloids under electric field, Linear and nonlinear rheology and rheo-optics.

*Theoretical studies:* Density functional theory and computer simulations.

**Teaching Experience**

25 years teaching courses for Graduate Physics students.

Ph.D. degree awarded so far: 33, working towards Ph.D.: 15

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**A Few Selected Publications:**

- 1) Divya Ganapathi, Hima K Nagamanasa, **A.K. Sood** and Rajesh Ganapathy, Growing Surface Tension of Amorphous- Amorphous Interfaces on Approaching the Colloidal Glass Transition. **Nature Communications** **9**:397/DOI:10.1038/s41467-018-02836-6 (2018)
- 2) Srabani Kar, Van Luan Nguyen, Dipti R. Mohapatra, Young Hee Lee and **A.K. Sood**, Ultrafast Spectral-response of Bilayer Graphene: Optical pump-Terahertz Probe Spectroscopy and Theory. **ACS Nano** **12**, 1785-1792 (2018)
- 3) Arup Paul, Manabendra Kuir, Dipankar Saha, Biswanath Chakraborty, Santanu Mahapatra, **A. K. Sood** and Anindya Das, Novel photo-tunable transfer characteristics in MoTe<sub>2</sub>-MoS<sub>2</sub> vertical hetero-structure. **npj 2D Materials and Applications** **1**, 17 (2017)
- 4) Sudeesh Krishnamurthy, Subho Ghosh, Dipankar Chatterji, Rajesh Ganapathy, **A.K. Sood**, A Micrometer-sized Heat Engine Operating Between Bacterial Reservoirs. **Nature Physics** DOI: 10.1038/ NPHYS3870 (2016)
- 5) Shreyas Gokhale, **A.K. Sood**, Rajesh Ganapathy, Deconstructing the glass transition through critical experiments on colloids. **Advances in Physics** **65**, 363-452(2016)
- 6) Shreyas Gokhale, Rajesh Ganapathy, K. Hima Nagamanasa, **A.K. Sood**, Localized excitations and the morphology of cooperatively rearranging regions in a colloidal glass-forming liquid. **Phys.Rev. Lett**, 116(6), 0683054 (2016)
- 7) Biswanath Chakraborty, Satyendra Nath Gupta, Anjali Singh, Manabendra Kuir, Chandan Kumar, Anindya Das, U.V. Waghmare, **A.K. Sood**, Phonon Renormalization of Doped Monolayer Phosphorene using in-situ Raman spectroscopy of electrochemically top gated device. **2D Materials**, 3(1), 015008(2016)
- 8) Sunil Kumar and **A.K. Sood**, Ultrafast Response of Plasmonic Nanostructures. **Reviews in Plasmonics** **2015**, (Ed. Chris D. Geddes) 131-167 (2016)
- 9) S. Kar, Yang Su, Rahul Nair, **A.K. Sood**, Probing photoexcited carriers in MoS<sub>2</sub> laminate by time resolved optical pump terahertz probe spectroscopy. **ACS Nano**, **9(12)**, 12004 (2015)
- 10) Sridevi S, K.S. Vasu, S. Sampath, S. Asokan and **A.K. Sood**, Optical detection of glucose & glycated hemoglobin using etched fiber bragg gratings coated with functionalized reduced graphene oxide, **J. Biophotonics** 1-10 (2015).
- 11) K. Hima Nagamanasa, Shreyas Gokhale, **A.K. Sood** and Rajesh Ganapathy, Direct measurements of growing amorphous order and non-monotonic dynamic correlations in a colloidal glass former, **Nature Phys.** DOI: 10.1038/NPHYS3289(2015)
- 12) Chandan K. Mishra, K. Hima Nagamanasa, Rajesh Ganapathy, **A.K. Sood** and Shreyas Gokhale, Dynamical facilitation governs glassy dynamics in suspensions of colloidal ellipsoids, **Proc. Nat. Acad. Sciences (USA)** **111**, 15362 (2014).

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- 13) Nitin Kumar, Harsh Soni, S. Ramaswamy and **A.K. Sood**, Flocking at a distance in active granular matter, **Nature Communications**, 5:4688/ DOI:10.1038/ncomms5688 (3 September, 2014).
  - 14) S. Gokhale, K. Hima Nagamanasa, R. Ganapathy and **A.K. Sood**, Direct experimental evidence of growing dynamical facilitation on approaching the colloidal glass transition, **Nature Communications**, 5:4685/DOI:10.1038/ncomms5685 (14 August, 2014).
  - 15) Vikram Rathee, Rema Krishnaswamy, Antara Pal, V.A Raghunathan, Marianne Imperor, Brigitte Pansu and **A.K. Sood**, A reversible shear-induced crystallization above equilibrium freezing temperature in a lyotropic surfactant system, **Proceedings of National Acad. Sciences (USA)** **110**, 14849 (2013).
  - 16) A. Bera, Koushik Pal, D.V.S. Muthu, Somaditya Sen, Prasenjit Guptasarma, U.V. Waghmare and **A.K. Sood**, Sharp Raman anomalies and broken adiabaticity at a pressure induced transition from band to topological insulator in  $\text{Sb}_2\text{Se}_3$ , **Phys. Rev. Lett.** **110**, 107401 (2013).
  - 17) Shreyas Gokhale, K. Hima Nagamanasa, V. Santhosh, **A.K. Sood** and R. Ganapathy, Directional grain growth from shear-induced anisotropic kinetic roughening of grain boundaries, **Proc. Nat. Acad. Sc. (USA)** **109**, 20314-20319 (2012).
  - 18) G. Chatterjee, P. Singh, S. Ahmed, S. Mondal, Amit D. Lad, V. Narayanan, I. Srivastav, N. Koratkar, **A.K. Sood** and G. Ravindra Kumar, Macroscopic transport of megaampere electron currents in aligned carbon nanotubes, **Phys. Rev. Lett.** **108**, 235005 (2012).
  - 19) A.V. Radhakrishnan, S.K. Ghosh, G. Pabst, V.A. Raghunathan and **A.K. Sood**, Tuning DNA-amphiphile condensate architecture with strongly binding counterions, **Proc. National Acad. Sciences (USA)** **109**, 6394 (2012).
  - 20) Nitin Kumar, S. Majumdar, Aditya Sood, Rama Govindarajan, Sriram Ramaswamy and **A.K. Sood**, Oscillatory settling in wormlike-micelle suspensions: bursts and a long time scale. **Soft Matter** **8**, 4310 - 4313 (2012).
  - 21) S. Majumdar, R. Krishnaswamy and **A.K. Sood**, Shear banding in yield stress bearing Langmuir monolayer, **Soft Matter** **7**, 7805 (2011).
  - 22) K. Hima Nagamanasa, Shreyas Gokhale, Rajesh Ganapathy and **A.K. Sood**, Confined glassy dynamics at grain boundaries in colloidal crystals, **Proc. Nat. Acad. Sc. (USA)** **108**, 11323-11326 (2011).
  - 23) S. Majumdar, R. Krishnaswamy and **A.K. Sood**, Discontinuous shear thickening confined in dilute Carbon nanotube suspensions, **Proc. Nat. Acad. Sc. (USA)** **108**, 8996-9001(2011).
  - 24) Nitin Kumar, S. Ramaswamy and **A.K. Sood**, Symmetry properties of the large deviation function of the velocity of a self-propelled polar particle, **Phys. Rev. Lett.** **106**, 118001 (2011).

- 25) N. Kamaraju, Sunil Kumar and **A.K. Sood**, Temperature-dependent chirped coherent phonon dynamics in  $\text{Bi}_2\text{Te}_3$  using high intensity femtosecond laser pulses, **EuroPhysics Lett.** **92**, 47007-47012 (2010).
- 26) A. Das, S. Jayanthi, H.S. Vinay Deepak, K.V. Ramanathan, Anil Kumar and **A.K. Sood**, Single file diffusion of confined water inside SWNT: NMR study, **ACS Nano** **4**, 1687-1695 (2010).
- 27) S. Mohan, J.Sinha, S.S. Banerjee, **A.K.Sood**, S.Ramakrishna and A.K.Grover, Large-low frequency fluctuations in the velocity of a driven vortex lattice in a single crystal of  $2\text{H-NbSe}_2$  Superconductor, **Phys. Rev. Lett.** **103**, 167001(2009).
- 28) S. Majumdar and **A.K. Sood**; Nonequilibrium fluctuation relation for sheared micellar gels in a jammed state, **Phys.Rev. Lett.** **101**, 078301 (2008).
- 29) A. Das, S. Pisana, B. Piscanec, B. Chakraborty, S. R. Saha, U.V. Waghmare, R. Yiang H.R. Krishnamurthy, A.K. Geim, A.C. Ferrari and **A.K. Sood**; Electrochemically Top Gated Graphene: Monitoring Dopants by Raman Scattering, **Nature Nanotechnology** **3**, 210 - 215 (2008).
- 30) A. S. Negi and **A.K. Sood**; Electric Field Enhanced Recognition Sensitivity between Grafted Ligands and Receptors, **Clinical Chemistry** **54**, 366-370 (2008).
- 31) A. Das, **A. K. Sood**, A. Govindaraj, A. Macro Saitta, Michele Lazzeri, Francesco Mauri and C.N.R. Rao, Doping in Carbon Nanotubes probed by Raman and Transport measurements, **Phys. Rev.Lett.** **99**, 136803(2007).
- 32) R. Ganapathy and **A. K. Sood**, Intermittency route to rheochaos in wormlike micelles with flow-concentration coupling, **Phys. Rev. Lett.** **96**, 108301 (2006).
- 33) Pinaki Chaudhuri, Smarajit Karmakar, Chandan Dasgupta, H. R. Krishnamurthy and **A. K. Sood**, Equilibrium glassy phase in polydisperse hard sphere system, **Phys. Rev. Lett.** **95**, 248301 (2005).
- 34) **A. K. Sood** and S. Ghosh, Direct generation of voltage and current by gas flow over carbon nanotubes and semiconductors, **Phys. Rev. Lett.** **93**, 86601-1 to 86601-4 (2004).
- 35) B. Chakrabarti, M. Das, C. Dasgupta, S. Ramaswamy and **A. K. Sood**, Spatiotemporal rheochaos in nematic hydrodynamics, **Phys. Rev. Lett.** **92**, 55501-1 (2004).
- 36) S. Ghosh, **A. K. Sood** and N. Kumar, Carbon Nanotube Flow Sensors, **Science**, **299**, 1042-1044 (2003).
- 37) U. Peter, D.Roux and **A. K. Sood**, Observation of a topological relaxation mode in random bicontinuous microemulsions, **Phys. Rev. Lett.** **86**, 3340-3343 (2001) .

- 38) R. Bandyopadhyay, G. Basappa and **A. K. Sood**, Observation of Chaotic Dynamics to Dilute Sheared Aqueous Solutions of CTAT, **Phys. Rev. Lett.** 84, 2022-2025(2000).
- 39) J. Wang, **A. K. Sood**, P. Satyam, Y. Feng, X. Wu, Z. Cai, W. Yun and S. K. Sinha, X-ray Fluorescence Correlation Spectroscopy: A Method for Studying Particle Dynamics in Condensed Matter, **Phys. Rev. Lett.** 80, 1110-1113 (1998)
- 40) G.A. Garrett, A.G. Rojo, **A. K. Sood**, J.F. Whitaker and R. Merlin, Vacuum Squeezing of Solids: Macroscopic Quantum States Driven by Light Pulses, **Science**, **275**, 1638-1640, (1997).
- 41) N. Chandrabhas, **A. K. Sood**, D.V.S Muthu, C.S. Sundar, A. Bharathi, Y. Hariharan and C.N.R. Rao, Pressure-induced Amorphization in solid C<sub>70</sub>: Raman and Photoluminescence Study, **Phys. Rev. Lett.** 73, 3411 - 3414 (1994)
- 42) S. Sanyal, **A. K. Sood**, S. Ramakumar, S. Ramaswamy and N. Kumar, Novel Polarization Dependence in Diffusive Wave Spectroscopy of Crystallizing Colloidal Suspensions, **Phys. Rev. Lett.** 72, 2963 - 2966 (1994)
- 43) J. Chakrabarti, H.R. Krishnamurthy and **A. K. Sood**, Density Functional Theory of Laser Induced Freezing of Colloidal Suspensions, **Phys. Rev. Lett.** 73, 2923 - 2926 (1994).
- 44) **A. K. Sood**, J. Menendez, M. Cardona and K. Ploog, Interface vibrational modes in GaAs-AlAs superlattices, **Phys. Rev. Lett.** 54, 2115 - 2118 (1985)
- 45) **A. K. Sood**, J. Menendez, M. Cardona and K. Ploog, Resonance Raman scattering by confined LO- and TO- phonons in GaAs-AlAs superlattices, **Phys. Rev. Lett.** 54, 2111 - 2114 (1985)



**Publications of A.K. Sood**

## Papers published in Journals

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1979

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1. S. Dattagupta and **A. K. Sood**, Model for infrared and Raman studies of molecular rotations in liquids and gases, **Pramana** 13, 423 - 445 (1979)

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1981

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2. **A. K. Sood**, A.K. Arora, V. Umadevi and G. Venkataraman, Raman study of temperature dependence of lattice modes in calcite, **Pramana** 16, 1 - 16 (1981)
3. **A. K. Sood**, A.K. Arora, S. Dattagupta and G. Venkataraman, Raman study of orientation dynamics of sulphate ions in potash alum, **J. Phys. C** 14, 5215 - 5224 (1981)
4. **A. K. Sood** and S. Dattagupta, Model for vibrational relaxation: Pure dephasing and depopulation. **Pramana** 17, 315 - 326 (1981)
5. S. Dattagupta and **A. K. Sood**, Generalised M-diffusion model of molecular rotations, **Z. Phys. B** 44, 85 - 89 (1981)

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1983

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6. D. Sahoo and **A. K. Sood**, Comment on "Light Scattering from a fluid in a non- equilibrium steady state", **Phys. Lett.** 95A, 491 - 492 (1983)
7. D. Sahoo and **A. K. Sood**, Light scattering from a liquid in a plane couette flow, **Phys. Lett.** 93A, 476 - 478 (1983)

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1984

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8. D. Sahoo and **A. K. Sood**, Possibility of modification of Rayleigh line in a non- equilibrium fluid with a constant shear velocity gradient, **Phys. Rev. A** 30, 2002 - 2804 (1984)
9. A.K. Arora, R. Kesavamoorthy, **A. K. Sood**, G. Venkataraman, R. Krishnaswamy and D. Sahoo, Study of precipitation in NaCl: P b<sup>2+</sup> by light scattering and ultramicroscopy, **J. Phys. Chem. Solids** 45, 69 - 77 (1984)
10. A.K. Arora, R. Kesavamoorthy and **A. K. Sood**, Aggregation and precipitation stages in NaCl: P b<sup>2+</sup> studied by UV absorption, **Solid State Commun.** 49, 871 - 874 (1984)
11. **A. K. Sood**, V. Umadevi, R. Kesavamoorthy and G. Venkataraman, Infrared studies on ion-irradiated quartz, **Pramana** 23, 573 - 593 (1984)
12. **A. K. Sood** and M. Cardona, Brillouin study of acoustic phonon softening and optical absorption coefficients of ultraheavily doped n-Si, **Solid State Commun.** 49, 299 - 301 (1984)
13. G. Contreras, **A. K. Sood**, M. Cardona and A. Compaan, Effect of free carriers on the Raman frequency of ultraheavily doped n-Si, **Solid State Commun.** 49, 303 - 305 (1984)
14. K. Aoki, **A. K. Sood**, H. Presting and M. Cardona, Pressure dependence of the E<sub>1</sub> gap in GaSb: Resonant Raman technique, **Solid State Commun.** 50, 287 - 289 (1984)

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**1985**

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15. **A. K. Sood**, G. Contreras and M. Cardona, Resonance Raman scattering in heavily-bulk-doped and ion- implanted laser an- nealed n-type germanium, **Phys. Rev. B** 31, 3760 - 3769 (1985)
16. **A. K. Sood**, J. Menendez, M. Cardona and K. Ploog, Resonance Raman scattering by confined LO- and TO- phonons in GaAs-AlAs superlattices, **Phys. Rev. Lett.** 54, 2111 - 2114 (1985)
17. **A. K. Sood**, J. Menendez, M. Cardona and K. Ploog, Interface vibrational modes in GaAs-AlAs superlattices, **Phys. Rev. Lett.** 54, 2115 - 2118 (1985)
18. **A. K. Sood**, J. Menendez, M. Cardona and K. Ploog, Second order Raman scattering by confined optical phonons and interface vibra- tional modes in GaAs-AlAs superlattices, **Phys. Rev. B (Rapid Communication)** 32, 1412 - 1414 (1985)
19. G. Contreras, **A. K. Sood** and M. Cardona, Raman scattering by intervalley carrier density fluctuations in n-Si: Intervalley and intravalley mechanisms, **Phys. Rev. B** 32, 924 - 929 (1985)
20. G. Contreras, **A. K. Sood** and M. Cardona, Raman scattering by intervalley carrier density fluctuations in n- Ge: Uniaxial stress and resonance effects, **Phys. Rev. B** 32, 930 - 933 (1985)
21. G.A. Kourouklis, **A. K. Sood**, H.D. Hochheimer and A. Jayaraman A high pressure Raman study of the optic phonon modes in BeO, **Phys. Rev. B (Rapid Communication)** 31, 8332 - 8334 (1985)
22. **A. K. Sood**, E. Anastassakis and M. Cardona, Raman piezospectroscopy in GaAs revisited, **Phys. Stat. Sol. (b)** 129, 505 - 512 (1985)
23. **A. K. Sood** and G. Gruner, Electric field dependence of the Raman phonon in the charge density wave state of o-TaS<sub>3</sub>, **Phys. Rev. B (Rapid Communications)** 32, 2711 - 2713 (1985)
24. G. Contreras, L. Tapfer, **A. K. Sood** and M. Cardona, Physical properties of ion implanted laser annealed n-type germanium, **Phys. Stat. Sol. (b)** 131, 475 - 487 (1985)

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**1986**

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25. **A. K. Sood** and M. Cardona, Rayleigh surface waves in ultraheavily doped n-Si, **Solid State Commun.** 60, 629 - 631 (1986)
26. B. Chakraborty, **A. K. Sood** and M.C. Valsakumar, Discommensurations in icosahedral phases, **Phys. Rev. B (Rapid Communications)** B34, 8202 - 8206 (1986)
27. **A. K. Sood**, J. Menendez, M. Cardona and K. Ploog, Superlattice effects on confined phonons - A reply, **Phys. Rev. Lett.** 56, 1751 (1986)

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**1987**

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28. **A. K. Sood**, W. Kauschke, J. Menendez and M. Cardona, Resonance Raman scattering by optical phonons in GaAs near the  $E_0$  band-gap, **Phys. Rev. B** 35, 2886 - 2891 (1987)
29. B.V.R. Tata, R. Kesavamoorthy and **A. K. Sood**, Structure factor for a two-component mixture of dilute colloidal suspensions, **Mol. Phys.** 61, 943 - 952 (1987)
30. W. Kauschke, **A. K. Sood**, M. Cardona and K. Ploog, Resonance Raman scattering in GaAs-AlAs superlattices: Impurity induced Frohlich interaction scattering, **Phys. Rev. B** 36, 1612 - 1619 (1987)
31. S.K. Deb and **A. K. Sood**, Interpolation model for molecular reorientation in gases and liquids, **Pramana** 28, 367 - 378 (1987)
32. **A.K. Sood**, Light scattering from colloids. **Hyperfine Interactions** 37, 365 - 384 (1987)

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**1988**

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