

Prof. (Dr.) Anandi Lal Verma
**AT: Director, Amity Institute of Applied
Sciences, Amity University, Sector 125,
Noida,**
Email: - alverma@amity.edu

Area of Interest

Experimental Laser Physics, Material Science, Time Resolved Spectroscopic Techniques.

List of Some Important Publications (Out of more than 120 Publications)

1. Hydrogen Peroxide Vapor Sensor using Metal-Phthalocyanine Functionalized Carbon Nanotubes; **A.L. Verma**, Swasti Saxena, GSS Saini, Vikesh Gaur and V. K. Jain , Thin Solid Films **519**, 8144-8148 (2011)
2. New Electro-optic Simulator Design Concepts for Seviceability Checks of Laser Seekers and Laser Warning Sensors; A.K. Maini, **A.L Verma** & V. Agarwal, Journal of Battlefield Technology, Vol. 13, 29-35 (2010).
3. Temperature-Dependent Raman Study of Ammonium Perchlorate Single Crystals : Evidence of NH_4^+ Quantum Rotation Below 30K; T. Chakraborty and **A.L. Verma**, Phys. Rev. **B39**, 3835-3844 (1989).
4. Temperature Dependent Raman Study of Ammonium Perchlorate Single Crystals: Orientational Dynamics of the NH_4^+ Ions and Phase Transitions; T. Chakraborty, S.S. Khatri and **A.L. Verma**, J. Chem. Phys. **84**, 7018-7028 (1986).
5. Presence of Tri-Iodide Ion in Iodine-Intercalated $\text{IBi}_2\text{Sr}_2\text{CaCu}_2\text{O}_8$ Superconductor, **A.L. Verma**, with P.V. Huang; **Phys. Rev. B48**, 9869-9872 (1993).
6. Orientational Dynamics and Quantum Mechanical Tunneling of Molecular Ions in Solids; **A.L. Verma**, Solid State Ionics : Science & Technology Ed. by B.V.R. Chowdari et al., World Scientific Publishing Co. (1998), pp 525-536.
7. Rotational Isomerism: Raman Spectra of n-Butane, 2-Methyl Butane and 2,3-Dimethyl Butane; **A.L. Verma**, W.F. Murphy and H.J. Bernstein, J. Chem. Phys. **60**, 1540-1544 (1974).
8. Resonance Raman Spectra of the Nickel-, Cobalt-, and Copper-Chelates of Mesoporphyrin-IX Dimethyl Esters; **A.L. Verma**, R. Mendelsohn and H.J. Bernstein, J. Chem. Phys. **61**, 383-390 (1974).

9. Resonance Raman Spectra of Copper-Porphin; **A.L. Verma** and H.J. Bernstein, *J. Chem. Phys.* **61**, 2560-2565 (1974).
10. Resonance Raman Spectra of Cu-Porphin-d₄(meso), and Ni-Porphin, and the Infrared Spectrum of Cu-Porphin-d₄; **A.L. Verma**, M. Asselin, S. Sunder and H.J. Bernstein, *J. Raman Spectrosc.* **4**, 295-303 (1976).
11. Mechanism of Photooxidation and Electron Transfer Processes in Free-Base Tetraphenylporphin Probed by Resonance Raman Spectroscopy; G.S.S. Saini, N.K. Chaudhury and **A.L. Verma**, *Photochem. Photobiol.* **55**, 815-822 (1992).
12. Simultaneous Formation of Mono and Dications of Free-Base Tetraphenylporphin During Photo-Oxidation Probed by Resonance Raman and Absorption Techniques; G.S.S. Saini, O.K. Medhi and **A.L. Verma**, *Chem. Phys. Lett.* **322**, 293-299 (2000).
13. Time-Resolved Resonance Raman Evidence for the Exciplex Formation of Free-Base Porphyrin with an Electron Acceptor; **A.L. Verma** et al; *Chem. Phys. Lett.* **267**, 506-514 (1997).
14. Excitation Energy Transfer in Langmuir-Blodgett Films of 5-(4-N-Octadecyl-pyridyl)-10, 15, 20-Tri-p-Tolyl-Porphyrin Studied by Time-Resolved Fluorescence Spectroscopy; Z. Zhang, **A.L. Verma**, N. Tamai, and Y. Ozaki; *Thin Solid Films* **333**, 1-4 (1998).
15. Dynamics of Intra-, and Inter-layer Energy Transfer in Langmuir-Blodgett Films of 5-(4-N-Octadecyl-pyridyl)-10, 15, 20-Tri-p-Tolyl-Porphyrin Studied by Time-Resolved Fluorescence Spectroscopy; **A.L. Verma**, Z. Zhang, N. Tamai, and Y. Ozaki; *Langmuir* **14**, 4638 – 4642 (1998).
16. Resonance Raman Studies of Hydrogenase-Catalyzed Reduction of Cytochrome-C₃ by Hydrogen : Evidence for Heme-Heme Interaction; **A.L. Verma**, K. Kimuta, A. Nakamura, T. Yagi, H. Inokuchi and T. Kitagawa, *J. Am. Chem. Soc.* **110**, 6617-6623 (1988).
17. SERR Evidence for Enzymatic Reduction of Cytochrome-C₃ on Ag Colloides; **A.L. Verma** et al.; *Chem. Phys. Letts.* **159**, 189-192 (1989).
18. Dynamics of Electric-Field-Induced Molecular Reorientation of a Surface-Stabilized Antiferroelectric Ferroelectric Liquid Crystal in the Smectic-C* Phase Probed by Time-Resolved Infrared Spectroscopy; **A.L. Verma**, B. Zhao and Y. Ozaki., *Phys. Rev.* **E63**, 51704-51707 (2001).
19. Delayed Response of the Alkyl Chains During Dynamical Switching in the Electric-Field-Induced Ferroelectric Phase of a Chiral, Antiferroelectric Liquid Crystal Probed by Dynamic

and Polarized Infrared Spectroscopy; **A.L. Verma, B. Zhao, H. Terauchi and Y. Ozaki; Phys. Rev. E59**, 1868-1872 (1999).

20. Dynamics of Electric-Field-Induced Molecular Reorientation and Segmental Mobility in the Smectic-C* Phase of a Ferroelectric Liquid Crystal : Faster Reorientation of the Cores than the Alkyl Chains Probed by Time-Resolved Infrared Spectroscopy; **A.L. Verma et al; Phys. Rev. E56**, 3053-3060 (1997).

Research Projects

1. One **externally funded major research project** on “Phthalocyanine Functionalized Carbon Nanotubes Assembly as Sensor for Hydrogen Peroxide and Nitrogen Oxides” funded by DRDO with a total cost of **Rs. 14.69 Lakhs** has been completed recently. In the past, have completed 10 major research projects from different funding agencies.

Patents

1. Full patent filed titled “Phthalocyanine Functionalized Carbon Nanotubes Assemblies as Chemical Vapor Sensors for Hydrogen Peroxide” in January, 2009.
2. Filed another full patent titled “Porphyrins Functionalized Carbon Nanotube Thin Films as Sensor for Detection of Nitrogen Dioxide” in August, 2009.