

Narendra K. Jaggi <http://iwu.edu/~njaggi>

Illinois Wesleyan University,
Bloomington, IL 61702-2900

njaggi@iwu.edu
Phone: (309) 556-3418

Biographical Sketch

A materials physicist by training, Narendra Jaggi currently teaches physics and conducts research in the areas of materials physics and artificial societies, at a liberal arts university in central Illinois. He has co-authored 37 research papers in refereed international journals and received numerous research grants. He identifies himself as a post-ethnic communitarian.

Education

Ph.D. in Physics, University of Bombay, India, 1982
B.Sc. (Honors) in Physics, Ranchi University, India, 1973

Employment History

1998- present: Professor and Chair, Physics Department, Illinois Wesleyan University, Bloomington, IL
1991 - 1997: Associate Professor and Chair, Physics Department, Illinois Wesleyan University, Bloomington, IL
1985 - 1991: Assistant Professor, Physics Department, Northeastern University, Boston, MA
1982 - 1985: Postdoctoral Fellow, Northwestern University, Evanston, IL
1975 - 1982: Scientific Officer, Solid State Physics Division, Department of Atomic Energy, Bombay, India.

Membership in Professional Organizations

APS (American Physical Society), Member, Materials Physics Division, International Physics Group and Forum on Education; organized and chaired a symposium at the 1994 Annual Meeting.

ISAAPT (Illinois Section of American Association of Physics Teachers)
Member and President (2000)

ACIPA (American Chapter of Indian Physics Association)
Life Member and Executive Secretary (94- 96)

AAPT (American Association of Physics Teachers) Member

Awards and Leadership roles:

1998 “Light of Unity” Award given by the Spiritual Assembly of the Bahais for his work in fostering racial unity.

2000 President, Illinois Section of American Association of Physics Teachers

1994-1996 Executive Secretary, American Chapter of Indian Physics Association

Research Awards (listed alphabetically)

- ARO** (Army Research Office), Laser Raman spectrometer
CER (Center for Electromagnetics Research), Microwave devices using high T_C superconducting thin films
NASA (National Aeronautical and Space Administration), JOVE Undergraduate research in materials physics
ONR (Office of Naval Research), Electro-rheological fluids
RC (Research Corporation), Magnetism in metallic multi- layers
SBIR (Small Business Innovation Research), Diamond-like thin films
SBIR (Small Business Innovation Research), High T_C thin films
SDIO (Strategic Defense Initiative Organization), High T_C superconductors

Editorial Board

Journal of Physics Teacher Education Online (current)

Service to Illinois Wesleyan University:

Chair, Department of Physics
 Member and chair, FDC (Faculty Development Committee)
 Member and chair, HC (Hearing Committee)
 Member and chair, CC (Curriculum Council)
 Member, CUPP (Council on University Programs and Policies)
 Member, Teacher Education Committee
 Member, Pre-Engineering Committee
 Member, Pre-Medical Committee
 Member, Council on Religious Life
 Member, Evelyn Chapel Advisory Board
 Member, Asian Studies Team
 Coordinator, Natural Science Colloquia Series
 Faculty Advisor, Student Senate
 Faculty Advisor, S.A.S.A., (South Asian Student Association)
 Faculty Advisor, S.P.S. (Society of Physics Students)
 Faculty Advisor, T.I.E.S. (Together In Equal Standing)

List of Refereed Publications (listed chronologically)

1. "Hyperfine Interactions in Ferromagnetic Rh₂MnSn," R.G. Pillay, P.N. Tandon, H.G. Devare, N.K. Jaggi and K.R.P.M. Rao, *Solid State Communications*, **24** (1977) 439
2. "Hyperfine Interactions in Rh₂ Mn Sn and Their Temperature Dependence," R.G. Pillay, P.N. Tandon, H.G. Devare, N.K. Jaggi and K.R.P.M. Rao, *Hyperfine Interactions*, **4** (1978) 392.
3. "Site Preference and Local Environment Effects in Fe_{3-x}Co_xGa," N.K. Jaggi, K.R.P.M. Rao, A.K. Grover, L.C. Gupta, R. Vijayaraghavan and L.D. Khoi, *Hyperfine Interactions*, **4** (1978) 402.
4. "Dependence of the Spin Glass Transition on the Details of Disorder," N.K. Jaggi, *Physica Status Solidi (b)*, **87** (1978) K81.
5. "A Simple Mossbauer Ferritometer," N.K. Jaggi and K.R.P.M. Rao, *Non Destructive Testing International*, **11** (1978) 281.
6. "Mossbauer Spectroscopy Study of Co₂FeGa and Fe₂CoGa," N.K. Jaggi, K.R.P.M. Rao and P.K. Iyengar, *Indian Journal of Physics*, **53A** (1979) 67.
7. "A Simple Method for the Precise Determination of T_C and the Exponent by Mossbauer Effect," N.K. Jaggi, *Journal of Physics*, **C10** (1979) L243.
8. "Ground State of a Two Dimensional Frustrated Ising Model," N.K. Jaggi, *Journal of Physics*, **C13** (1980) L177.
9. "Non-exponential Relaxation and Remanence in Ising Spin-Glass Models," N.K. Jaggi, *Journal of Physics*, **C13** (1980) L307.
10. "Phase Analysis Using Scattering Mossbauer Spectroscopy," N.K. Jaggi and K.R.P.M. Rao, *Proceedings of the international Conference on Applications of Mossbauer Effect*, (1981) 268.
11. "CEMS Study of Corrosion of Plain Carbon Steels in Simulated Pressurized Water Reactor Environment," N.K. Jaggi, K.R.P.M. Rao, Y.D. Dande, P.K. Chauhan and H.S. Gadiyar, *Proceedings of the International Conference on Applications of Mossbauer Effect*, (1981) 313.
12. "Mossbauer and Magnetization Studies of Epsilon Fe_xN," G.M. Chen, N.K. Jaggi, E. Yeh, L.H. Schwartz and J.B. Butt, *Journal of Physical Chemistry*, **87** (1983) 5326.

13. "Cofacial Assembly of Metallomacrocycles as an Approach to Controlling Lattice Architecture in Low Dimensional Molecular Solids: Polymeric [Fe Pc Pyz]," B.N. Diehl, T. Inabe, N.K. Jaggi, J.W. Lyding, O. Schneider, M. Hanack, C.R. Kannewurf, T.J. Marks and L.H. Schwartz, *Journal of American Chemical Society*, **106** (1984) 3207.
14. "Mossbauer Spectroscopy Study of Composition Modulated Fe-V Thin Films," N.K. Jaggi, L.H. Schwartz, H.K. Wong and J.B. Ketterson, *Journal of Magnetism and Magnetic Materials*, **49** (1985) 1.
15. "Magnetism in Composition Modulated Superlattices of Fe-V: a Comment," N.K. Jaggi and L.H. Schwartz, *Journal of Physical Society of Japan*, **54** (1985) 1652.
16. "Phase Characterization of Iron-Manganese Fischer-Tropsch Catalysts," N.K. Jaggi, L.H. Schwartz, J.B. Butt, H. Papp and M. Baerns, *Applied Catalysis*, **13** (1985) 347
17. "Silica Supported Iron Nitride in Fischer-Tropsch Reactions: I. Characterization of the Catalyst," E. Yeh, N.K. Jaggi, J.B. Butt and L.H. Schwartz, *Journal of Catalysis*, **91** (1985) 231.
18. "Magnetic Properties of Compositionally Modulated Fe/Cr Thin Films," C. Sellers, Y. Shiroishi, N.K. Jaggi, J.B. Ketterson and J.E. Hilliard, *Journal of Magnetism and Magnetic Materials*, **54-57** (1986) 787.
19. "Effective-medium Theory of an Anisotropic Conductor Applied to the High T_C Superconductors," R.S. Markiewicz, K. Chen and N.K. Jaggi, *Physical Review*, **B 37** (1988) 9336.
20. "Superconductivity in Thin Films of Bi-Sr-Ca-Cu Oxide Deposited via Ablation of Oxide Pellets," N.K. Jaggi, M. Meskoob, S.F. Wahid and C.J. Rollins, *Applied Physics Letters*, **53** (1988) 1551
21. "Superconductivity at 122K in Tl (BaCa)₂Ca₃Cu₄O_y With Four Consecutive Copper Layers," P. Haldar, K. Chen, B. Maheswaran, A. Roig-Janicki, N.K. Jaggi, R.S. Markiewicz and B.C. Giessen, *Science*, **241** (1988) 1198.
22. "Interaction of High Temperature Superconductors with Conductive Oxides," A.C. Greenwald, E.A. Johnson, J.S. Wollam, A.J. Gale and N.K. Jaggi, *Proceedings of MRS Conference on Science and Technology of Thin Film Superconductors*, (Nov. 14-18,1988) 193.
23. "Ion Beam Deposition of Diamond Like Coatings," A.C. Greenwald, J.K. Hirvonen and N.K. Jaggi, "Processing and Characterization of Materials Using Ion Beams," *Materials Research Society Proceedings*, **128A** (1989) 109.

24. "Electric Field Induced Solidification," R. Tao, J.T. Woestman and N.K. Jaggi, *Applied Physics Letters*, **18** (1989) 1844.
25. "Possible Phase Transitions in Electro-Rheological Fluids," N.K. Jaggi, R.Tao and J.T. Woestman, in *Electro-Rheological Fluids*, pub. Technomic Press, April 1990, pp. 53-62.
26. "Harmonic Generation in $TlBa_2Ca_3Cu_4O_y$ Superconductor," S.F. Wahid and N.K. Jaggi, *Physica C (Superconductivity)*, **170** (1990) 395.
27. "Structure and Dynamics of Dense Dipolar Fluids in an Electric Field and Their Relevance to Electro-Rheological Fluids," N.K. Jaggi, *Journal of Statistical Physics*, **64** (1991) 1093.
28. "Analytic Solution of a Generalized Critical State Model of Type II Superconductors," S.F. Wahid and N.K. Jaggi, *Physica C (Superconductivity)*, **184** (1991) pp. 88-92.
29. "Quasistatic Nonlinear Magnetic Response of Granular Superconductors: Applicability of Different Models," S.F. Wahid and N.K. Jaggi, *Physica C (Superconductivity)*, **194** (1992) pp. 211-222.
30. " A Lattice Gas Approach to the Structure and Dynamics of Electrorheological Fluids", J. Chen and N.K. Jaggi, *Journal of Undergraduate Research in Physics*, **12** (1994) pp 34-38
31. " A Novel Technique for Studying the Shear Elastic Properties of Weak Solids", J.A. Payne and N.K. Jaggi, *Journal of Undergraduate Research in Physics*, **12** (1994) pp 43-46
32. " Art in Physics: Exotic Macrostructures in Swelling Polyelectrolyte Gels", D. Deardorff, K. Branshaw and N.K.Jaggi, *Journal of Undergraduate Research in Physics*, **13** (1995) pp 47-52
33. "Polyelectrolyte Gels as Artificial Muscle Systems", K. Branshaw, D. Deardorff and N.K. Jaggi, *Journal of Undergraduate Research in Physics*, **13** (1995) pp 43-46
34. "Boundary Effects on Structures in Two Dimensional Dipolar Systems", J. Rinne and N. K. Jaggi, *Solid State Physics*, **44** (2001) pp 545-546
35. "Multiple Mössbauer Spectra Data Acquisition with an In-situ Cyclic Voltammetry System" , T. L. Greave, J D Cashion, A L Benci, N K Jaggi, C Hogan and A M Bond, *Hyperfine Interactions C* , (2002) in press
36. "Physics and Sociology: Neighborhood Racial Segregation", Alexander J. Laurie and Narendra K. Jaggi, *Solid State Physics*, **45** (2002) pp 362-363

37. “ Role of ‘Vision’ in Racial Neighborhood Segregation: A Variant of the Schelling Segregation Model”, Alexander J. Laurie and Narendra K. Jaggi, *Urban Studies* (2003) in press
38. “Multiple Spectrum Mossbauer Data Acquisition: Techniques and Applications”, J. D. Cashion, P.R. Smith, T.L. Greaves, J.A. Davis, A.L. Benci, S.S. San and N.K. Jaggi, *Nuclear Instruments and Methods* (under review)
39. “ Artificial Society Approaches to Understanding Racial Neighborhood Segregation”, a commissioned invited review article for *Journal of Real Estate Literature*

Invited Papers at Conferences

NATO Advanced Study Institute on Dynamics of Simple and Complex Fluids; Los Alamos National Lab, June 26-29, 1990, panel discussion on the open questions in Electro-rheological fluids.

Meeting of the Rheological Society, (October 22-25, 1990), "Computer Simulations of Dense Dipolar Fluids in an Electric Fields"

37th Meeting of Texas Section AAPT - Texas Section APS, (November 9-10, 1990)
" Lattice Structures in Finite and Constrained Purely repulsive Systems"

International Conference on Electro-Rheological Fluids, Southern Illinois University, Carbondale, Illinois (October 15-16, 1991), " Possible Phase Transitions in Electro-Rheological Fluids"

Annual Symposium of Department of Atomic Energy, Bombay, (December 20-26, 1996), " Giant Electromotility and Exotic Swelling Structures in Some Polyelectrolyte Gel Systems"

National Conference on Teaching and Learning Diversity in American Higher Education, Monterey, California (April 8-11, 1997), "Female Friendly Physics: Proven Strategies from the Trenches"

Contributed Papers at Conferences:

Too numerous to list.

Service to wider community:

Available upon request

