Stanford

Walter Harrison

Professor of Applied Physics, Emeritus

Bio

BIO

Born April 26, 1930 in Flushing, New York. Grew up in Toledo, Ohio, then to Cornell University for Engineering Physics, B of EP in 1953. Married to Lucille Carley (Lucky) in 1954. PhD in Physics with Frederick Seitz as advisor, in 1956. Nine years in the Physical Metallurgy Section of the General Electric Research Laboratory. Four sons, Richard, John, William, and Robert. Professor of Ap[plied Physics at Stanford University from 1965 to 2001, then Emeritus. Employed by Acorn Technologies, Inc.

ACADEMIC APPOINTMENTS

- Emeritus Faculty, Acad Council, Applied Physics

HONORS AND AWARDS

- Fellow of the American Physical Society Guggenheim Award, Humboldt Fellow, APS

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Theory of metal-semiconductor interfaces and field-effect transistors

Publications

PUBLICATIONS

- **Effective-mass theory of metal-semiconductor contact resistivity** *APPLIED PHYSICS LETTERS*
  Harrison, W. A., Goebel, A., Clifton, P. A.
  2013; 103 (8)
- **Effects of matching conditions in effective-mass theory: Quantum wells, transmission, and metal-induced gap states** *JOURNAL OF APPLIED PHYSICS*
  Harrison, W. A.
  2011; 110 (11)
- **Origin of Sr segregation at La1-xSrxMnO3 surfaces** *PHYSICAL REVIEW B*
  Harrison, W. A.
  2011; 83 (15)
- **Oxygen atoms and molecules at La1-xSrxMnO3 surfaces** *PHYSICAL REVIEW B*
  Harrison, W. A.
  2010; 81 (4)
- **Finding the Energy Bands of Silicon** *PHYSICS IN PERSPECTIVE*
  Harrison, W. A.
  2009; 11 (2): 198-208
- **Tight-binding theory of manganese and iron oxides** *PHYSICAL REVIEW B*
  Harrison, W. A.

2008; 77 (24)

- **Heisenberg exchange in the magnetic monoxides** *PHYSICAL REVIEW B*
  Harrison, W. A.
  2007; 76 (5)
- **Origin of charge density at LaAlO3 on SrTiO3 heterointerfaces: Possibility of intrinsic doping** *PHYSICAL REVIEW LETTERS*
  Siemons, W., Koster, G., Yamamoto, H., Harrison, W. A., Lucovsky, G., Geballe, T. H., Blank, D. H., Beasley, M. R.
  2007; 98 (19)
- **A semiclassical model of dielectric relaxation in glasses** *JOURNAL OF APPLIED PHYSICS*
  Jameson, J. R., Harrison, W., Griffin, P. B., Plummer, J. D., Nishi, Y.
  2006; 100 (12)
- **Valence-skipping compounds as positive-U electronic systems** *PHYSICAL REVIEW B*
  Harrison, W. A.
  2006; 74 (24)
- **Tight-binding theory of the dielectric susceptibilities and transverse charges of insulators** *PHYSICAL REVIEW B*
  Harrison, W. A.
  2006; 74 (20)
- **Simple calculation of Madelung constants** *PHYSICAL REVIEW B*
  Harrison, W. A.
  2006; 73 (21)
- **STRUCTURAL STABILITY AND INTERATOMIC INTERACTIONS IN COVALENT SYSTEMS** *20TH INTERNATIONAL CONF ON THE PHYSICS OF SEMICONDUCTORS*
  Harrison, W. A.
  WORLD SCIENTIFIC PUBL CO PTE LTD.1990: 1731–1734
- **CONSEQUENCES OF FERMI-SURFACE GEOMETRY** *INTERNATIONAL CONF ON MATERIALS AND MECHANISMS OF SUPERCONDUCTIVITY : HIGH TEMPERATURE SUPERCONDUCTORS 2*
  Harrison, W. A.
  ELSEVIER SCIENCE BV.1989: 769–770
- **TIGHT-BINDING THEORY OF MOLECULES AND SOLIDS** *PURE AND APPLIED CHEMISTRY*
  Harrison, W. A.
  1989; 61 (12): 2161-2169
- **LATTICE-RELAXATION AROUND SUBSTITUTIONAL DEFECTS IN SEMICONDUCTORS** *PHYSICAL REVIEW B*
  Bechstedt, F., Harrison, W. A.
  1989; 39 (8): 5041-5050
- **SUPERCONDUCTIVITY ON A YBA2CU3O7 LATTICE** *PHYSICAL REVIEW B*
  Harrison, W. A.
  1988; 38 (1): 270-283
- **CITATION CLASSIC - PSEUDOPOTENTIALS IN THE THEORY OF METALS** *CURRENT CONTENTS/PHYSICAL CHEMICAL & EARTH SCIENCES*
  Harrison, W. A.
  1988: 18-18
- **CITATION CLASSIC - PSEUDOPOTENTIALS IN THE THEORY OF METALS** *CURRENT CONTENTS/ENGINEERING TECHNOLOGY & APPLIED SCIENCES*
  Harrison, W. A.
  1988: 18-18
- **DIELECTRIC SCREENING IN SEMICONDUCTORS** *PHYSICAL REVIEW B*
  Harrison, W. A., Klepeis, J. E.
  1988; 37 (2): 864-873

- **OVERLAP INTERACTIONS AND BONDING IN IONIC SOLIDS** *PHYSICAL REVIEW B*
  Harrison, W. A.
  1986; 34 (4): 2787-2793
- **THEORY OF THE MULTICENTER BOND** *PHYSICAL REVIEW B*
  VANSCHILFGAARDE, M., Harrison, W. A.
  1986; 33 (4): 2653-2659
- **ELECTRONIC-STRUCTURE OF BORON** *JOURNAL OF PHYSICS AND CHEMISTRY OF SOLIDS*
  VANSCHILFGAARDE, M., Harrison, W. A.
  1985; 46 (9): 1093-1100
- **COULOMB INTERACTIONS IN SEMICONDUCTORS AND INSULATORS** *PHYSICAL REVIEW B*
  Harrison, W. A.
  1985; 31 (4): 2121-2132
- **THEORY OF BAND LINE-UPS** *JOURNAL OF VACUUM SCIENCE & TECHNOLOGY B*
  Harrison, W. A.
  1985; 3 (4): 1231-1238
- **ELECTRONIC-STRUCTURE AND THE PROPERTIES OF INTERFACES** *ULTRAMICROSCOPY*
  Harrison, W. A.
  1984; 14 (1-2): 85-87
- **THE BONDING PROPERTIES OF MERCURY CADMIUM TELLURIDE** *JOURNAL OF VACUUM SCIENCE & TECHNOLOGY A*
  Harrison, W. A.
  1983; 1 (3): 1672-1673
- **INTERIONIC INTERACTIONS IN TRANSITION-METALS** *PHYSICAL REVIEW B*
  Wills, J. M., Harrison, W. A.
  1983; 28 (8): 4363-4373
- **NEW TIGHT-BINDING PARAMETERS FOR COVALENT SOLIDS OBTAINED USING LOUIE PERIPHERAL STATES** *PHYSICAL REVIEW B*
  Harrison, W. A.
  1981; 24 (10): 5835-5843
- **TOTAL ENERGIES IN THE TIGHT-BINDING THEORY** *PHYSICAL REVIEW B*
  Harrison, W. A.
  1981; 23 (10): 5230-5245
- **SEMICONDUCTOR PROPERTIES BASED UPON UNIVERSAL TIGHT-BINDING PARAMETERS** *PHYSICAL REVIEW B*
  Ren, S. Y., Harrison, W. A.
  1981; 23 (2): 762-770
- **UNIVERSAL LINEAR-COMBINATION-OF-ATOMIC-ORBITALS PARAMETERS FOR D-STATE SOLIDS** *PHYSICAL REVIEW B*
  Harrison, W. A., FROYEN, S.
  1980; 21 (8): 3214-3221
- **THEORY OF POLAR SEMICONDUCTOR SURFACES** *JOURNAL OF VACUUM SCIENCE & TECHNOLOGY*
  Harrison, W. A.
  1979; 16 (5): 1492-1496
- **2-DIMENSIONAL ECHOCARDIOGRAPHIC QUANTIFICATION OF INFARCT SIZE ALTERATION BY PHARMACOLOGIC AGENTS** *AMERICAN JOURNAL OF CARDIOLOGY*
  Meltzer, R. S., WOYTHALER, J. N., Buda, A. J., Griffin, J. C., Harrison, W. D., Martin, R. P., HARRISON, D. C., Popp, R. L.
  1979; 44 (2): 257-262
- **ELEMENTARY PREDICTION OF LINEAR COMBINATION OF ATOMIC ORBITALS MATRIX-ELEMENTS** *PHYSICAL REVIEW B*
  FROYEN, S., Harrison, W. A.
  1979; 20 (6): 2420-2422

- **ELEMENTARY THEORY OF HETEROJUNCTIONS** *JOURNAL OF VACUUM SCIENCE & TECHNOLOGY*
  Harrison, W. A.
  1977; 14 (4): 1016-1021
- **SURFACE RECONSTRUCTION ON SEMICONDUCTORS** *SURFACE SCIENCE*
  Harrison, W. A.
  1976; 55 (1): 1-19
- **EXTENSION OF GORDON-KIM OVERLAP INTERACTION TO OPEN-SHELL SYSTEMS** *JOURNAL OF CHEMICAL PHYSICS*
  Harrison, W. A., SOKEL, R.
  1976; 65 (1): 379-381
- **PSEUDOPOTENTIAL THEORY OF COVALENT BONDING** *PHYSICAL REVIEW B*
  Harrison, W. A.
  1976; 14 (2): 702-711
- **SCHOTTKY BARRIERS WITHOUT MIDGAP STATES** *PHYSICAL REVIEW LETTERS*
  Harrison, W. A.
  1976; 37 (5): 312-313
- **STRUCTURE OF VALENCE BANDS OF ZINCBLENDE-TYPE SEMICONDUCTORS** *PHYSICAL REVIEW B*
  Pantelides, S. T., Harrison, W. A.
  1975; 11 (8): 3006-3021
- **ANGULAR FORCES IN TETRAHEDRAL SOLIDS** *PHYSICAL REVIEW LETTERS*
  Harrison, W. A., Phillips, J. C.
  1974; 33 (7): 410-411
- **BOND-ORBITAL MODEL .2.** *PHYSICAL REVIEW B*
  Harrison, W. A., Ciraci, S.
  1974; 10 (4): 1516-1527
- **BOND-ORBITAL MODEL AND PROPERTIES OF TETRAHEDRALLY COORDINATED SOLIDS** *PHYSICAL REVIEW B*
  Harrison, W. A.
  1973; 8 (10): 4487-4498
- **MULTI-ION INTERACTIONS AND STRUCTURES IN SIMPLE METALS** *PHYSICAL REVIEW B*
  Harrison, W. A.
  1973; 7 (6): 2408-2415
- **ORBITAL-CORRECTION METHOD** *PHYSICAL REVIEW A*
  Harrison, W. A.
  1973; 7 (6): 1876-1888