CURRICULUM VITAE
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Current and recent positions
Editor in Chief, *J. Geophysical Research - Planets* (Dec. 2006-February 2011);
Principal Investigator, *Galileo* Near Infrared Mapping Spectrometer (NIMS) (*Galileo* impacted Jupiter in Sept. 2003);
European Space Agency Supporting Investigator, *Venus Express* Mission
Co-Investigator, *Venus Express* and *Rosetta* Visible, Infrared, and Thermal Imaging Spectrometer (VIRTIS);
PI on numerous NASA programs (PG&G, PIDDP, ASTID, ASTEP, Exobiology, CDAP).

Current research includes:

Galileo data analysis and laboratory investigations of minor species (e. g., carbonates, sulfates, and hydroxides) on the surfaces of the Galilean satellites and their radiation chemistry and sputtering properties.

Cassini data analysis and related laboratory studies, determining the state of trapped CO_2 on the icy Galilean and Saturnian satellites.

Venus Express analyses, using VIRTIS spectra and laboratory measurements to characterize Venus's sulfuric acid clouds and identity the ultraviolet absorber.

Rosetta, Experimental radiolytic and photolytic studies of ices relevant to the outer solar system, and the interstellar medium; Radiative transfer of resonance lines in cometary comas.

Laboratory photolysis of gaseous ammonia + acetylene producing iminonitrile chromophores, enabling spectral comparisons to Jupiter's Great Red Spot.

"Airburst" explosions of sun-impacting comets, extending my SL-9 shock and fireball calculations to solar impact conditions (with J. Brown, U. Glasgow).

Development of "Compositional Infrared Interferometric Spectrometer" (CIRIS) for planetary missions (PIDDP); Related analyses of radiation noise physics at Jupiter.

Development of ultraviolet spectrometer for planetary missions (JPL R&TD Program).

Experienced in planetary atmospheres and surface science, with particular expertise on icy satellite surface composition and chemical processes, experimental atomic and molecular physics, optics, atomic and molecular spectroscopy (gaseous and condensed phase), rocket and spacecraft experimentation, ultraviolet and infrared remote sensing, radiative transfer, reflectance spectroscopy, planetary and laboratory radiolysis, photolysis & sputtering, airglow and aeronomy, shock physics.

Ph.D., Physics, 1970, University of Southern Calif., Minor in Chemical Physics;
B. S., 1963, Calif. State Polytechnic University.
Research Associate at USC 1970-1978, Joined JPL in 1978.

HONORS AND AWARDS:
JPL Achievement Award (Jovian Satellite Composition and Atmosphere), Award for Excellence, Jet Propulsion Laboratory (NIMS Technical Management), NASA Group Achievement Award (Near Infrared Mapping Spectrometer), NASA Group Achievement Award (Galileo Project), Antarctic Service Medal, National Science Foundation, NASA Group Achievement Award (Io Sodium Emission Study Team), Special commendation, Ames Research Center (Pioneer Saturn), NASA Group Achievement Award (Pioneer 11 Saturn Mission Team) NASA Group Achievement Award (Pioneer 10 Scientific Instrument Team), National Science Foundation Fellowship (NATO Study Institute), National Aeronautics and Space Administration Traineeship (University of Southern California), Western Electronics Manufacturing Association Scholarship.

SCIENTIFIC PUBLICATIONS:

A double monochromator for the extreme ultraviolet, *Appl. Optics* **8**, 1129 (1969), **R. W. Carlson**.

Curves of growth of autoionizing spectral lines with applications to the 3s-4p transition in argon, *J. Opt. Soc. Am.* **60**, 1204 (1969), A. Chutjian and **R. W. Carlson**.

The extreme ultraviolet dayglow of Jupiter, *Planet. Space Sci*. **19**, 327 (1971), **R. W. Carlson** and D. L. Judge.

A fast continuum light source for the extreme ultraviolet, *Rev. Sci. Inst*. **42**, 171 (1971), **R. W. Carlson**.

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Absolute Raman scattering cross section of molecular hydrogen, *Astrophys. J*. **178,** 551 (1972), **R. W. Carlson** and W. R. Fenner.

Possibility of 0III λ304Å emissions in the extreme ultraviolet airglow, *Letter, J. Geophys*. *Res.* **77**, 6282 (1972), R**. W. Carlson**.

Absorption cross Sections of N_2, O_2, NO, CO, CO_2, N_2O, CH_4, and C_2H_4 in the 180-700Å region, *J. Quant. Spectrosc. Radiat. Transfer* **13**, 1023 (1973), L. C. Lee, **R. W. Carlson**, D. L. Judge and M. Ogawa.

An atmosphere on Ganymede from its occultation of SAO186800 on June 7, 1972, *Science* **182**, 53 (1973), **R. W. Carlson** et al.

The extreme ultraviolet photoabsorption cross section of argon in the wavelength region 180-700 Å, *Appl. Optics* **12**, 409 (1973), **R. W. Carlson**, D. L. Judge, L. C. Lee and M. Ogawa.

Fluorescence radiation from atomic nitrogen produced in the extreme ultraviolet by photoexciation of N_2, *Chem. Phys. Lett.* **19**, 183 (1973), L. C. Lee, **R. W. Carlson**, D. L. Judge, and M. Ogawa.

Rocket Observations of the Extreme Ultraviolet Airglow, *Planet. Space Sci*. **12**, 879 (1973) **R. W. Carlson** and D. L. Judge.

Observation of autoionization processes in the production of excited CO_2^+ ions, *J. Phys. B*. (Atomic and Molecular Physics) **6**, L343 (1973), **R. W. Carlson**, D. L. Judge and M. Ogawa.

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Observation of $O^+(^2P_o - {}^2D_o)$ λ7319Å emissions in the twilight and night airglow, *Nature* **248**, 400 (1974), **R. W. Carlson** and K. Suzuki.

Pioneer 10 observation of the ultraviolet glow in the vicinity of Jupiter, *Science* **183**, 317 (1974), D. L. Judge and **R. W. Carlson**.

Pioneer 10 ultraviolet photometer observations at Jupiter encounter, *J. Geophys. Res.*, **79,** 3623 (1974), **R. W. Carlson** and D. L. Judge.

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Vacuum ultraviolet fluorescence from photodissociation fragments of CO and CO_2, *J. Chem. Phys.* **63**, 3987 (1975), L. C. Lee, **R. W. Carlson**, M. Ogawa and D. L. Judge.

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VESAT: the Venus Environmental Satellite Discovery Mission. *Acta Astron.* **35**, 417–425 (1995), K. H. Baines, **R. W. Carlson**, D. Crisp, J. T. Schofield, B. Bézard, C. de Bergh, P. Drossart, et al..

From the surface to the thermosphere: NIMS infrared observations of the Venus night side, Venus II, Tucson, Arizona, January 4-7 (1995), **R. W. Carlson** and the NIMS Team.

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