

## **WILLIAM B CARLSON**

New York State College of Ceramics at Alfred University

General topic: design and systems analysis

Current interest: wave propagation in granular media / custom algorithm development

### EDUCATION

Engineering Science and Mechanics, Ph.D., M.Eng., B.Arch.Eng., Pennsylvania State University

### BIOGRAPHY

William Carlson is Professor of Systems Engineering and Product Design at the New York State College of Ceramics in Alfred University. Professor Carlson teaches in the curriculums of both the mechanical and the ceramic engineering programs. His interests involve: mechanics, transport theory, electroceramics, renewable energy, sensor devices, and design. Recent courses are: Introduction to Engineering, Computer Aided Engineering, the mechanics sequence of: Statics and the Strength of Materials, and Finite Element Analysis. Past experience includes work at the Materials Research Laboratory (Pennsylvania State University) and fellowships with the Naval Research Laboratory. His principal industrial experience was with the Advanced Energy Programs Department at the General Electric Company Space Division.

### SKILLS

Algorithm development & simulations, studies of systems, devices, and fields

Present Activity: matrix analysis algorithms / classical particle mechanics

Software environment: Xcode / Swift Language and Accelerate Framework

## RECENT PUBLICATIONS

“Finite element study of the effect of material properties on reaction forces produced by solitary wave propagation in granular chains,” R.W. Musson and W. Carlson, *Granular Matter*, 18 (2), 1-8 (2016).

“Axisymmetric evaluation of analytic potentials around thin disks,” W.B. Carlson and K.L. Carlson, *Ferroelectric Letters*, 43, 4-6 (2016).

“Plastic deformation in a metallic granular chain,” R.W. Musson and W. Carlson, *Computational Particle Mechanics*, 3 (1), 69-82 (2015).

“Simulation of solitary waves in a monodisperse granular chain using COMSOL multiphysics: localized plastic deformation as a dissipation mechanism,” R.W. Musson and W. Carlson, *Granular Matter*, 16 (4), 543-550 (2014).

## HISTORY OF ACTIVITIES

Numerical simulations relating to transduction and energy conversion in devices and systems. Renewable energy systems (wind, solar, heat engines and heat pumps).

Composite hydrophones, MLC capacitor mechanics and electroactive devices. Analysis, design, and algorithm development.

Advanced heat pump analysis, Stirling engine design, dynamics of wind turbines, and development of a solar Rankine power system. Spacecraft electrical and thermal studies.

## WORK HISTORY (below \*)

Professor, NY State College of Ceramics, Inamori School of Eng., Alfred Univ., Alfred, NY

Past: Systems Engineer/Analyst, Space Division, General Electric Company, Valley Forge, PA

Past: NRL faculty summer researcher with applications of piezoelectrics devices and modeling

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\* Major Industrial Experience

Organization	Title	Duties	Dates
General Electric Space Division	Electrical Systems Analyst	Spacecraft Power (visiting) Spacecraft Thermal	1983-1987 1975-1976
General Electric Advanced Energy Programs Dept.	Thermal/Mechanical Systems Analyst	Solar Heating and Cooling Heat Engine Analysis Wind Turbine Dynamics	1976-1982
Naval Research Laboratory (summer)	Senior Fellow  Fellow	Hydrophone Devices  Composite Sensor Analysis	1996  1988