



THERMO NEUTRONICS

Request for Collaboration Partners

Sorensen (Integrated Thermal Circuits) ITC Initiative

Submitted by

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ABSTRACT

CONCEPT: The theory of ThermoNeutronics is being used to create Sorensen Integrated Thermal Circuits (ITC) to accommodate the flow, transfer, generation, storage and use of thermal energy in separate or combined circuits or modules that may be assembled and applied at the nano, micro and macro scale.

Sorensen Integrated Thermal Circuits

The original application of ThermoNeutronics was at the macro scale to control the flow of thermal energy in buildings and structures for energy efficiency reasons. ThermoNeutronics is now investigating the micro and nano scale applications for scientific and military stealth and shielding uses and for minimizing heat build-up in electronic equipment.

APPLICATIONS: ThermoNeutronics is seeking collaboration for early science and prototype technology development in this area for the following projects:

- Thermal shields with embedded energy conversion for drones and energy sources to enhance stealth capabilities
- Individual “energy suit” development providing reduced or no heat signatures and allowing to preserve body at comfortable temperatures
- Independent energy sources for sustainable long term remote missions
- Heat dissipation for laptops and other heat generating electrical equipment

KEY WORDS: *Thermoneutronics (thermal neutralizing electronics), integrated thermal circuits, thermal shunts, thermal net, thermal diffusivity, thermal lag, thermal mass, thermal composite, heat deflection, heat drain, micro/nano integrated thermal circuits, heat repulsion, thermal shielding, Carbon Nanotubes, Integrated Energy Modules*

RESEARCH: Phase 1 (Year 1) will consist of development of the mathematical and computational models for ThermoNeutronics in general with the specific addition of Infrared and Near Infrared heat flow and control. Virtual 3-D thermal models will be developed which will permit virtual prototypes to be created under simulated circumstances and to offer preliminary experiments at the concept demonstration level and validation of modeling. Phase 2 (Year 2) will advance the virtual models into actual prototype models for testing and improving. Phase 3 (Year 3) will be the commercialization stage.

COLLABORATION: ThermoNeutronics LLC is proposing an assembly of government agencies, public and private research laboratories, private investors, and industrial and commercial collaboration partners for early science and prototype technology development of this Sorensen ITC Initiative. The collaboration may include contributions of funding, facilities, personnel, materials, resources, markets and contacts.

PROJECT TEAM:

The principal engineers and scientists who will lead the Project Team include:

Dr. Gary L. Sorensen, Founder, ThermoNeutronics LLC

Dr. Sorensen is a materials scientist who specializes in thermal circuitry, thermoneutronics and business development. Dr. Sorensen will be the Project Manager for the Sorensen ITC Initiative.

Randy D. Horsak, PE, Founder, ThermoNeutronics LLC

Mr. Horsak is an electrical engineer with both program and project management experience. Mr. Horsak will coordinate the work of the commercialization.

Consultants:

Dr. Somenath Mitra, New Jersey Institute of Technology, Department of Chemistry and Environmental Sciences

Dr. Mitra is a chemist who specializes in the research and development of CNT-related technologies and devices. Dr. Mitra will provide technical guidance and direction for the Integrated Energy Modules and all CNT applications.

Dr. Pavel V. Tsvetkov, Texas A&M University, Nuclear Engineering Department

Dr. Tsvetkov is a nuclear scientist with and expertise in heat transfer and virtual model simulations. Dr. Tsvetkov will work with Dr. Sorensen on the Sorensen ITC Initiative.