



**Date:**

**Friday, March 26, 2010**

**Time:**

**3:35 p.m. – 3:50 p.m.**

**Presenter:**

***“Building Integrated CSP R&D Program Curriculum Initiative”***

Joel H. Goodman

Design researcher, PVO-Pergolas.com

Multidisciplinary student engineering research and design projects are outlined for a Building Integrated (BI) CSP (Concentrating Solar Power) active solar thermal buildings R&D program initiative to reduce natural gas demand for mid temperature (-80C/176F - 250C/482F+) industrial/process heat applications in USA and international regions. Project parts include: building exterior and interior nonimaging (NI)-CPC type augmenting reflector troughs transverse/parallel to evacuated tube collectors (ETC) and other collectors; fixed spherical segment bowl reflector concentrators with two-axis tracking linear receivers; and one and two axis tracking heliostats elevated receiver (thermal/CPV) systems. Emphasis is on a walk-in flat-plate roof-collector system suitable for snow accumulation regions. Building Interior Evacuated Tubes and Reflectors (BI-ET&R) case studies include a new exercise facility (gym, pool, storage tank in climbing wall, etc.) with an inclined roof-collector composed of typical bays containing ETC banks and NI reflectors, monolithic high transmittance tempered glass roof-cover, and daylighting. The BI-CSP R&D student project outline is graphically presented with schematic designs of small-to-large building configurations extremely integrated with CSP technologies for selected applications. An aim is to reduce energy fuels imported to buildings after they are built by collecting renewable energy on-site. Troughs, bowls and heliostats. systems are CSP technologies and BI-CSP studies are based on modified components of CSP developments currently in early stages of commercialization for remote solar power production.

**See presenter  
biography  
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### Presenter Biography:

#### Joel H. Goodman

Education; Massachusetts Institute of Technology 1968 M. Architecture; U. of Minn. 1966 B. Arch. w/distinction Teaching: U. of Minnesota, Assistant Professor (1971-72,74-76,82); Texas Technical University (1983). Research/Grants completed: Solar energy studies for State of Wisconsin DOAIFocus on Energy: 2006- PVO-Pergolas, Wisconsin Focus on Energy;2004- Wood PVOLT-2 project; 2001-2- Wood PVOLT project (2001-#80071)(2002- #82025); 1999-Building Integrated Tracking PV and Daylighting #88016;1995-Solar Heating with Seasonal Storage (SHSS) Prefeasibility Study, #85054 1991-93: Solar Concentrating Architectonics, Design Arts Grant #91-4259-0121, US National Endowment for the Arts. 1983: Research Associate, Crosbyton Solar Power Project, US DOE funded, at Texas Technical University 1977-82, 1984, & 1987: Auroville, India, resident researcher in the fields of water conservation, reforestation, renewable energy and building technology. 1975- Educational Development Grant, to develop Earth Awareness Portable Classrooms, U. of Minnesota, with Criteria Foundation. Previous architectural employment: Rapson, FAIA, Parker FAIA, The Architects Collaborative, Building Systems Development. Recent Publications: "Building Interior Evacuated Tubes and Reflectors", Solar 2009 ASES Conf., Buffalo, NY May 2009. "Architectural Active Solar Energy Reflector Collector Studies", Solar 2008 ASES Conf., San Diego."Architectonic Studies with Selected Reflector Concentrating Solar Collectors", 2007 J. of Green Building V2#2