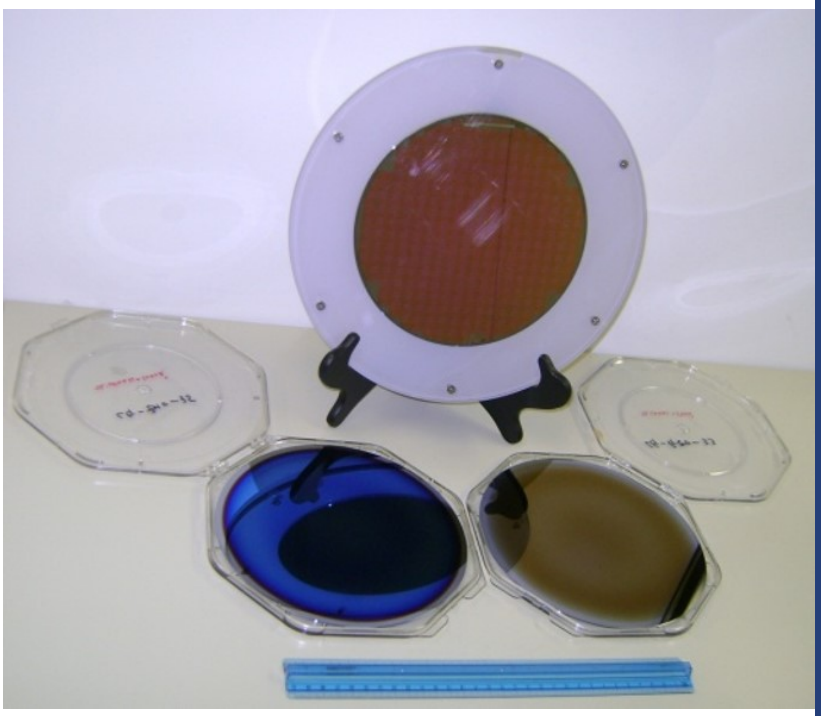
SMI MOCVD Systems and Demonstration Services Provide Researchers the Ability to Grow Epsilon Near Zero (ENZ) Materials and Structures

Structured Materials Industries, Inc. provides tailored solutions for researchers looking to grow Epsilon Near Zero (ENZ) materials through either procuring an SMI MOCVD System or using SMI in-house deposition tools and services. SMI has demonstrated many Transparent Conductive Oxide (TCO) alloys over the years; including doped and undoped ZnO alloys, nitrides, and other materials. ENZ materials hold many advantageous properties that may be modified; such as: tuning thin film the dielectric permittivity to have an extremely low values in order to enhance the nonlinearity of the refractive index. Applications for ENZ material can include: quantum optics, radiation pattern electromagnetic control, ultrafast optical switching, potential three-dimensional self-trapping of light, harmonic generation, four-wave mixing, directive emission and radiation phase front shaping, electromagnetic transparency cloaking, tunneling waveguides, and large-area single-mode devices, among many other applications.

Image shows example of research scientist using an SMI in-house system.

SMI has an extensive history in growing and producing single and multilayer thin transparent conducting oxides as well as dielectric layers, among many other materials, SMI also brings advanced resources to address developing, understanding, and enabling the implementation of and manufacturing of semiconductor related materials. SMI designs and fabricates tools that use the most advanced semiconductor growth techniques to produce materials such as large area TCOs , dielectric , ferroelectrics , compound semiconductors, and Si semiconductors , among many others for private, university, and government organizations around the world.



The images above show examples of different thin film materials grown at SMI on various sizes and types of substrates including 2" circular (top left), 1" square (bottom left),and 8" circular (right) wafers .

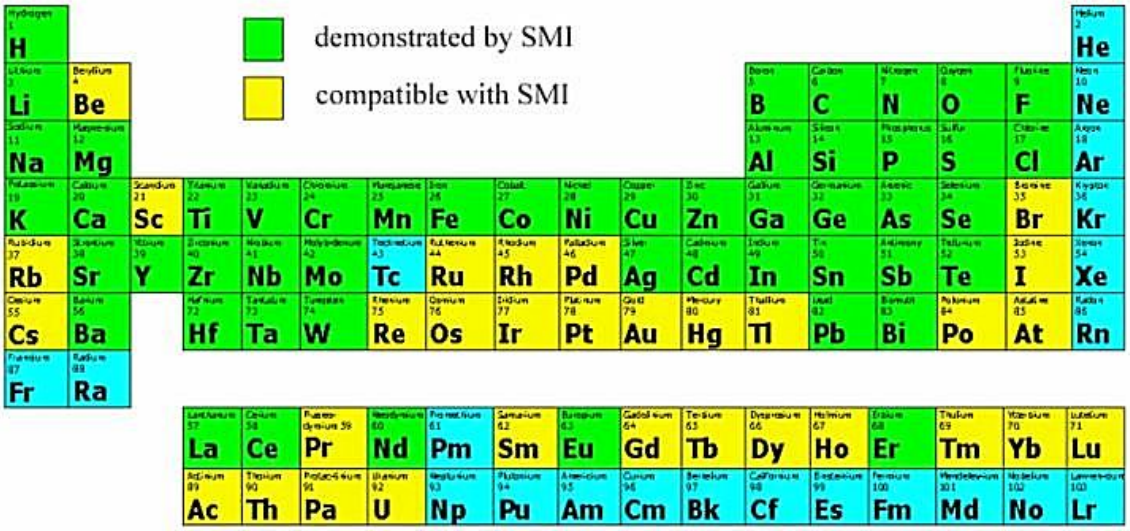
Download Brochure

Structured Materials Industries, Inc. (SMI), with over 60 fielded MOCVD tools and 10 MOCVD, CST, FB-CVD, HVPE, and ALD process demonstration tools in-house, has extensive result oriented experience in providing materials, hardware, and device assistance to other businesses as well as research organizations. SMI is a leading provider of thin film research and development MOCVD, PECVD, CVD, and ALD deposition systems for electronic, optical and electro-optic device fabrication, among other applications. We produce systems for research and production, in sizes ranging from stand-alone systems to multiple-reactor system to high volume production tools. SMI maintains an in-house applications laboratory, with facilities for materials characterization and device fabrication that are used to support our customers material development efforts.

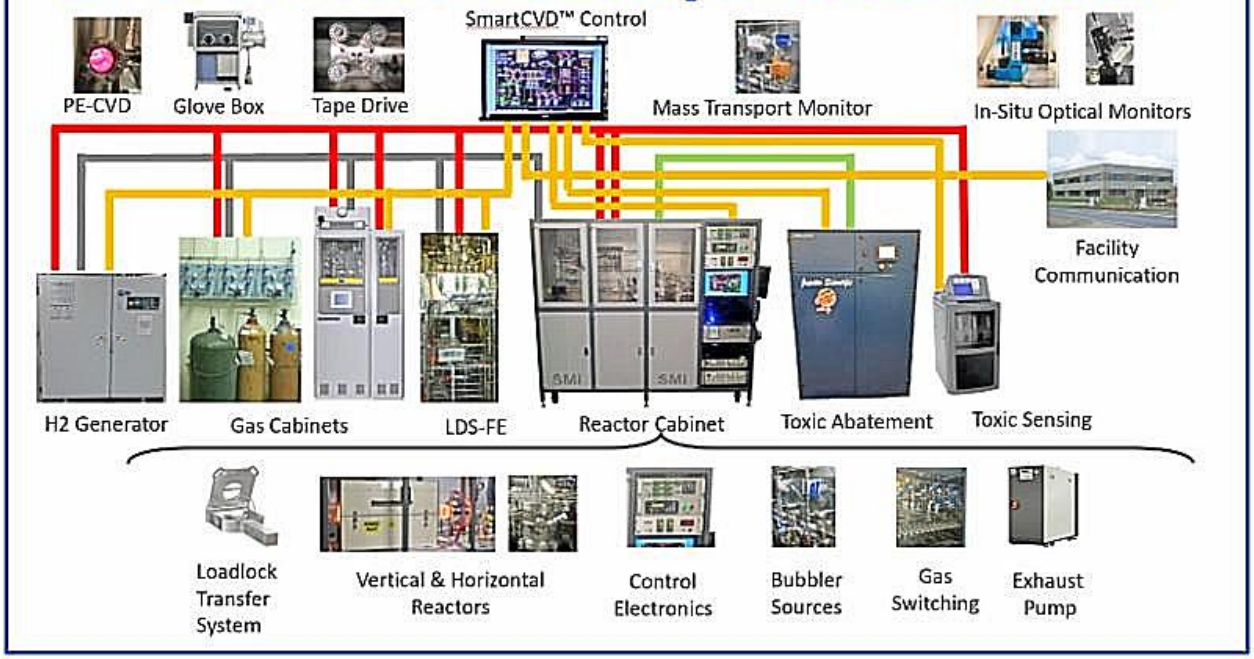
Structured Materials Industries, Inc. has an extensive history in working with customer/partners to deliver results in SBIR/STTR and other awards. We can provide a support infrastructure for writing award winning proposals and provide the physical support infrastructure for carrying out awarded programs through completing customer innovations or calling on collaborators to fullfill innovations. We are always open to confidentially exploring additional partnerships and collaborations. SMI has worked on various projects featuring Gallium Oxide (in addition to other oxides), TMDs, AlGaN, InGaN, BN, Compound Semiconductors, Dielectrics, Ferroelectrics, Phase Change Chalcogenides, Carbides, Diamond, Battery and Fuel Cell Electrodes, Graphene, CNTs, Other Nanowires, Fuel Cell Materials, Thin Film Batteries, Metals, and so on as well as has grown materials on a diverse set of substrates using in-house tools.

To take advantage of SMI material development or consulting services contact us today to get more information and quoted. SMI is also happy to participate in the development of proposals and budgetary quotations. Sign up today to become an SMI Follower!

CVD Materials Demonstrated at SMI



SMI Provides Complete Solutions



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