Summary of First-Ever New York Superconductor Summit

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Executives and technologists representing superconductor companies and other organizations and universities that provide research and support technologies throughout New York—including several CSA members—converged last month in a first-of-its-kind NY-focused economic summit. The gathering was designed to highlight the current and potential economic benefits the technology can have for the state.

In all, nearly 100 representatives from the state's high-tech community, state and community leaders, business professionals, academic institution officials and instructors and students came together for the "New York State Superconductor Technology Summit: Cultivating Economic Growth from within the Empire State."

Summit attendees learned about the latest performance benefits and advancements in large-scale and electronics, analog and digital applications of superconductor technology. A good portion of the day-long event also was dedicated to creating excitement about high-tech careers for students, and exploring how to create more visibility for the industry as a whole.

"This was a great opportunity to develop stronger connections within the state's superconductor community, provide a spotlight on the exciting advancements being made and highlight the economic potential for the state," said Dr. Elie Track, senior partner at Hypres. "We are already receiving positive feedback from participants and attendees who are interested in growing this into an annual event in order to further develop this industry within the state." Track played a key role in the coordination of the summit.

The summit, which was hosted at Westchester Community College (WCC) and initiated through the efforts of New York State Senator Andrea Stewart-Cousins, featured several presentations and panel sessions, an exhibit area and numerous networking opportunities. CSA Corporate Sustaining Member (CSM) Hypres helped to organize the event and also presented on the digital applications and economic benefits panels. Hypres is developing and producing digital superconductor electronics for a variety of mobile networking, advanced computing and bio-tech applications.

Representatives from CSA CSMs Cryomech, Inc., QDrive, CFIC and SuperPower, Inc. also served as presenters. Cryomech is a recognized leader in new cryorefrigerator design and manufacturing, Qdrive is the cryogenic cooler development and manufacturing arm of the Clever Fellows Innovation Consortium, Inc. (CFIC) and SuperPower is a leading developer and producer of second-generation high-temperature superconducting wire.

From left, Dr. Ted Nygreen, Dr. John Rowell and Dr. Elie Track discussing the summit under the summit banner. Photo courtesy Westchester Community College.

"We enthusiastically supported and participated in this event," said Traute Lehner, Sr. Director, Marketing and Government Affairs at SuperPower. "The remarkable breadth of the superconductor industry in New York becomes clearer and its true potential for economic growth is better understood by all constituencies in the state through such events. SuperPower plans to be a leader in organizing the next event in this series."

State Senator Andrea Stewart-Cousins provided introductory remarks emphasizing her dedication to advancing science and technology education and its role in promoting economic success for New York's technology industries, including superconductors. Senator Cousins' remarks followed the opening welcome from Dr. Joseph Hankin, President of WCC, and were followed with similar supportive remarks from Pat Keegan on behalf of US Congresswoman Nita Lowey.

Dr. John Rowell, a well-known and distinguished superconductor expert, delivered the plenary session—an overview of the technology, its history and latest advancements. Rowell is a pioneer in early inventions and discoveries in superconducting devices at Bell Laboratories, and is a member of the National Academy of Sciences, National Academy of Engineering and a Fellow of the Royal Society. In his presentation, Dr. Rowell put in perspective the applications of superconductors that began approximately 50 years after its discovery in 1911, with superconducting magnets, and a few years later, MRI, the most successful of these applications. He then outlined the other applications ranging from power transmission cables and transceivers for wireless communications to the newly defined area of superconducting motors for wind power generation, concluding with the topical observation of the strength of the superconductor industry in New York State.

The electronics panel included Dr. Oleg Mukhanov of Hypres, Prof. Laszlo Mihaly, Chair of the Physics Department at Stony Brook University, Dr. Carl Rosner of CardioMag (and founder of the former Intermagnetics General Corporation) and Dr. Gerald Gibson, of IBM Yorktown Heights.

Mukhanov expanded on the successes and plans in wireless communication applications. Mihaly discussed the important contributions of the universities in providing the expert labor force and advancing the research frontier. Rosner provided a high impact and compelling presentation on the great potential of the superconductivity-enabled magnetic imaging of the heart that he is advancing at his company which can be a key enabler of health advances as well as cost reduction in medical care. Gibson placed the frontier advances of conventional electronics in context and explained the future potential of quantum computing based on superconductor devices.

The large scale panel included Traute Lehner of SuperPower, Dr. Qiang Li of Brookhaven National Laboratory, Dr. Michael Parizh of Philips Healthcare, Dr.

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Kathleen Amm of GE Global Research (a CSA Lifetime Member) and Dr. John Corey of Q-Drive.

Lehner explained the powerful impact of high temperature superconductors (HTS) in improving the environment through intrinsically "green" technologies based on HTS wires. Li outlined the many projects at Brookhaven involving superconductors and in particular a new project in collaboration with SuperPower for high efficiency energy storage. Amm and Parizh explained the highly successful MRI technologies, uniquely enabled by superconductors, and outlined future plans of their companies in producing further advances in this important field.

Corey provided a highly stimulating presentation on the role of cryocoolers in enabling virtually all superconductor applications.

In the economic development panel, WCC graduate David Donnelly provided students in the audience an example of how a career can advance in the superconductor industry. Peter Gifford of Cryomech reinforced Corey's presentation and shared Cryomech's growth plans in the cryogenics field, covering wide application areas that include, but also go beyond superconductors.

Dr. Michael Hennessy of MTECH Labs highlighted the importance of small businesses in nimbly advancing new concepts and applications based on superconductors and the role they play in bridging the gap between government and large industry. Dr. Jeff Kristoff of Vistec Lithography explained the role of advanced microfabrication and nanotechnology tools in enabling the advanced integrated circuit structures for both semiconductors and superconductors. Susan Jaffe of the Empire State Development Corporation explained the role of the state government in catalyzing commercial success for the New York industries.

WCC's Dr. Ted Nygreen, Associate Dean of Academic Affairs for the Division of Mathematics, Computer, Engineering and Physical Sciences and Technologies, gave the concluding comments, thanking all the participants and expressing everyone's feeling of encouragement at the newly formed sense of synergy and strength for superconductor technology in the state and in the US at large.