



and materials research for *MRS Bulletin* (doi:10.1557/mrs.2013.210). “It may mean discovering new materials, finding better materials synthesis and integration techniques for quantum computation and quantum communication, and exploring and exploiting new phenomena for topological quantum phenomena and quantum sensing,” says Lau.

NQIP is, at least partially, a response to huge investments in QIS made by other countries. “Europe has decided to invest €1 billion over the next 10 years and China—significantly more than that,” said Supratik Guha, a research director at Argonne National Laboratory (ANL) and former head of the Nanoscience and Technology Division and the Center for Nanoscale Materials at ANL (see *MRS Bulletin*, March 2018; doi:10.1557/mrs.2018.46). The 2018 bill intends to bring the United States to the forefront of QIS through a 10-year plan to create a “QIS workforce pipeline.”

The foundation of that plan is a series of QIS centers. So far, specifics on these centers are few but it is believed to follow the path of other research consortia. Dozier suspects the participating institutions will combine their interests, expertise, staff, equipment, facilities, and funding apparatuses for the QIS centers. “The [planned] centers will likely be affiliated with national laboratories,” Levy says. As far as the numbers of centers to be created, that is “very much up for grabs.” Also, unlike previously legislated centers, NQIP has no stipulation that specifically encourages institutions for underrepresented minorities, Dozier says.

Is the maximum allotment of USD\$625 million enough to compete against the rest of the world? “It is certainly a really good start,” Lau answers. “I suspect that more investment will be made/needed to be truly competitive against Europe and China. There’s a lot of talk of significantly ramping up investment,” she adds. Though exactly

how the monies will be divided has not yet been decided, Levy says. “The actual investment is not fully in place.”

That future investment is planned in five-year tranches: the National Institute of Standards and Technology is to fund up to USD\$400 million; NSF is to fund up to USD\$50 million for each center (see *MRS Bulletin*, March 2020; doi:10.1557/mrs.2020.76); and DOE is to fund up to USD\$125 million for each center, according to the legislation. But many a program has been derailed with money that was promised but not delivered.

MRS will urge Congress to provide more funds when it makes its semiannual visit to Capitol Hill, Dozier says. Lau cautions, “On the other hand, at this time of [a] tight budget situation, further investment in QIS might mean undercutting budgets in other much-needed areas of basic and applied research—in my opinion this is a danger that funding agencies should strive to avoid.”

Clinton Park

South African science ministries respond favorably to State of the Nation address by president

Blade Nzimande, who heads South Africa’s Departments of Science and Innovation and of Higher Education, Science and Technology, supports President Cyril Ramaphosa’s commitment on moving South Africa toward a low carbon growth trajectory.

The country’s energy challenges have provided researchers with an opportunity to look differently at, for example, the use of hydrogen fuel cell technology (HFCT). The Minister confirmed that the National HFCT Research, Development and Innovation Strategy will continue to aim at

stimulating innovation to further contribute toward the national electricity grid.

“We have also started rolling out demonstrations for the provision of electricity and mobility using platinum-based hydrogen fuel cells. These include the rolling out of fuel cells to a rural school in the North West,” Minister Nzimande says.

The Minister welcomes the President’s announcement of the establishment of a new University of Science and Innovation to be located in the city of Ekurhuleni, a major economic hub in the country. The university will be closely

linked to driving high-impact and cutting-edge technological innovation with current and future industries, sectors, and firms to drive the frontiers of a future economy, the Minister says.

“We believe that this location, together with fresh new challenges arising from the revolution in science and technology in the third decade of the 21st century, offers an opportunity for a new initiative to provide cutting-edge science and technology innovations across crucial areas such as data science, machine learning, artificial intelligence, block chain, robotics, and hydrogen-powered technologies including smart transportation and logistics systems,” Nzimande says. □

New episodes available at mrs.org/bulletin-podcast



MRS Bulletin PODCAST

Presenting breakthrough news and interviews with researchers on the hot topics of 3D bioprinting, artificial intelligence and machine learning, bioelectronics, perovskites, quantum materials, robotics, synthetic biology, and more. **Listen Today!**