
Article published Mar 18, 2006
FAMU taps plasma's energy
University creates new research center
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It's as gee-whiz as science gets: superheating gases with lasers to invent, perhaps, a new generation of energy resources independent of oil. Plasma physics are what's behind this research.

Florida A&M University has just created a Center for Plasma Science and Technology, housed in its physics department, with the aim of taking the lead in what FAMU Vice President for Research Keith Jackson calls "a small field that has great promise."

The university is investing \$3.7 million in renovations at a building in Innovation Park to boost the program, nicknamed CePaST. The improvements, now under way, are scheduled to be completed in October.

It will become the premier facility in Florida for plasma research, according to FAMU, the top producer of bachelor's degrees for blacks among both historically black and all U.S. colleges, and fifth highest among black colleges in producing blacks with Ph.D.'s.

The center will research how to use plasmas to generate energy through fusion and develop plasma technology to detect from a great distance very small amounts of radioactivity or biochemical contamination.

It will be a training ground for black physicists as well, filling a workforce need for the nation.

"FAMU already has the largest number of African-Americans (graduate students) pursuing physics in the country," Jackson said. "If current trends continue, FAMU will be producing 40 percent of the African-Americans with Ph.D.s in physics."

"If we're going to have fusion power plants ... there needs to be a high-level workforce with expertise to make it happen," he said. "One of the goals of FAMU is to provide the next generation of scientists and engineers to work on that plan."

The center's goal will be to have 32 undergraduate- and graduate-student researchers and 10 post-doctoral researchers. Now there are about 22 students there.

With the country focused on becoming energy self-sufficient, and safe from something like a terrorist "dirty bomb," the timing of FAMU's plasma center is right, said its leader.

"FAMU was identified in a study in 2004 as one of the top four or five places (that) should be targets for support from the Department of Defense because of its strengths in plasma physics," said FAMU physics professor Joseph Johnson, the center's director.

People are more likely to know about the theory of relativity than plasma physics. The subject is unfamiliar to scientific amateurs and has nothing to do with plasma in the blood.

Plasmas are gases that change from neutral with no charge to both positively and negatively charged particles. The process is conducted using very powerful laser beams, discharges of electricity, microwaves or shock waves. What can be done with the gases and the spin-off technology already is present in ordinary objects such as air purifiers and high-performance microcircuits for computers.

But because the potential of plasmas is so great and they're far from fully understood, they are a hot research field. Literally hot, too, because one of the challenges is how to deal with the extreme heat generated by plasmas in order to make energy.

FAMU's plasma-physics program has been pulling in \$4 million a year in U.S. Department of Defense research grants.

With an eye toward increasing its research efforts, the center is applying now for U.S. Department of Energy grants. Using plasmas to produce energy through fusion is very expensive, and the prototype probably is at least a decade away.

But the center is ready for the challenge. "This shows you what kind of investment FAMU has made in physics and scientific research," Jackson said.

