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## Three Sprinters on a High-Tech Track

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Gary L. Harris



Keith H. Jackson

PHOTOGRAPHY BY JIM WELLS

"...their thoughtwaves oscillate to the beat of drums that have barely been imagined, let alone invented."

That's the way *Washington Post* writer Michael Schrage describes the conceptual designers of a new generation of computers. He could have been writing just as well about those who are developing the materials, and the materials technology, for the devices which power these computers—and a host of other future electronic gadgets. He could have been writing about Gary L. Harris, Keith H. Jackson and Michael G. Spencer, principal investigators for the research being undertaken at Howard's Rockwell Solid State Electronics Laboratory.

The three young assistant professors say it was a love of science and technology, established in childhood, that propelled them towards microelectronics, that still-young field which encompasses the disciplines of solid-state physics, materials science, chemistry and electrical engineering.

"I've always enjoyed engineering because you can *make* something," says Spencer, a playful gleam in his eye. "You can take an idea out of your head and actually physically make it. With most other disciplines, the best you can do is take an idea and put it on paper."

In fact, for Harris it was an interest in how things are made that led him—backwards—into microelectronics. He explains: "I started out being fascinated by televisions and radios and used to take them apart to see how they worked and to repair them. Then I became more and more curious about the whole system involved and the sub-components of the system. From there I became interested in looking beyond that to the active device—the transistor. And from there I wanted to find

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out what made the transistor work and where it came from. Well, the transistor came from materials. So the natural thing was for me to get interested in the materials. So I sort of used an onion approach. That is, I first looked at the whole onion and then I began to tear off its layers."

Today, Harris is growing other kinds of layers, layers of semiconductor material.

"Semiconductor research is inherently interesting because you're always pushing out against the limits of what you can do with the material," says Jackson who doesn't remember a time when he wasn't interested in science. "The whole materials area is a hot, growing area, one that generates a lot of interest among policymakers in government and industry who look at science. Particularly as more esoteric sciences are deposed from their positions, there will be a lot more interest in materials science because it's easy to see a direct benefit from it."

Jackson and his two colleagues have come to Howard with strong academic backgrounds supplemented by some practical experience in industry. Jackson earned a B.S. in physics from Morehouse College and a B.S. in electrical engineering from the Georgia Institute of Technology through a dual degree program offered by the two institutions. He then went on to earn M.S. and Ph.D. degrees in physics at Stanford University and to work as a member of the technical staff of Hewlett Packard Laboratories.

Harris and Spencer hold three degrees each from Cornell University; bachelor's and master's in electrical engineering and doctorate in electrical engineering/electrophysics. Harris' experience in industry includes work with IBM and the Martin Marietta

Corp., while Spencer's was earned at Bell Telephone Laboratories and the General Electric Electronics Laboratory.

Working in an academic environment has special appeal to the three men, they say, because it enables them to pursue interests in diverse areas, instead of being confined to one particular area, as is usually the case in industry. They also like being in charge of building a research program almost from scratch and being in a position to train a new generation of engineers—particularly minority engineers.

When Harris was growing up, he never personally knew any Black engineers. Now, of course, he is one. And he wanted to come to Howard, he says, because "I thought I could multiply myself here."

John Hurly, a Ph.D. student in electrical engineering who holds bachelor's and master's degrees in physics from Florida State University, might be considered a case in point. His Ph.D. project involves designing a gallium arsenide device which will be placed in a small organism (a squid, later a small mammal) to measure certain responses. "The device will be used to stimulate the cell with some type of electrical impulse in order to get some information about the cell and its characteristics that possibly could tell us what might be wrong with someone," he explains.

Hurley pays special tribute to Harris, Jackson and Spencer for supporting a research project which "deviates from strict solid state applications" by combining such disparate fields as engineering and medicine. Of his three mentors, in general, he adds: "They're enthusiastic, spirited and very much aware of new things that are happening. There's no stagnating here." □



Michael G. Spencer