

# Center's Test May Help Solve Mystery

DID ANCIENT RULERS REDUCE THE value of coins for profit?

That question prompted an analysis by UL Lafayette's Louisiana Accelerator Center of 54 coins believed to be the first used as monetary exchange in the western world. Produced in about 600 BC in what is now Turkey, they are part of a collection owned by The American Numismatic Society in New York, N.Y.

The coins are made of nuggets of electrum, a naturally occurring alloy of gold and silver. Testing was performed by the Center to determine the ratio of gold to silver in each one.

The Center's ion microprobe, which emits high-energy particle beams at nearly 20,000 miles per second, analyzes a target. The target – in this case, a coin – emit x-rays that hold specific content information.

"The particle beam has a fairly high sensitivity that allows us to not only determine the content of the coins but to do it without hurting

them," said Dr. Gary Glass, director of the Louisiana Accelerator Center.

Dr. Peter van Alfen, an assistant curator for the Society, said that in antiquity there was a significant difference between the value of gold and silver, just as there is today. Without a way to determine the ratio of gold to silver, two coins with the exact weight could have had different values.

"To solve this problem, and perhaps to quiet transactional disputes, the state seems to have stepped in and offered pre-weighed nuggets of electrum, stamped with a seal that enforced a certain value for that piece, no matter what its intrinsic value might have actually been," he wrote in an article to be published in the ANS magazine.

"But just what the state's motives were is a matter of dispute. Did the

state actively seek to exploit the situation by seriously overvaluing or even adulterating the electrum with more silver. . . or was it simply offering a good faith solution to the electrum 'crisis,'?"

Van Alfen said the analysis of coins' content is "often key to answering important questions in the study of numismatics." He said tests on other coins from the ANS' collection may be conducted in the future, over several years.

Images on the crudely shaped coins offer clues to their origin, according to the assistant curator.

A lion on the front, for instance, may indicate that it came from a certain city or country. A "stamp," or marking on the back could be the "signature" of the coin's maker.



**Ancient coins had different shapes and weights.**



BLAINE PAUL

**Dr. Dmitri Perkins**

## RESEARCH COULD HELP SOLDIERS COMMUNICATE

Dr. Dmitri Perkins is designing better networking systems for wireless technologies.

His work has earned him one of the National Science Foundation's most prestigious awards and a five-year \$400,000 grant. The assistant professor in the Center for Advanced Computer Studies at UL Lafayette received the NSF's Faculty Early Career Development Award.

"Dr. Perkins can visualize where technology is going," said Dr. Magdy Bayoumi, CACS director. "He knows where it's going and he knows its impact on society."

The grant will enable Perkins and his research team to develop a deeper understanding of the fundamental performance, scaling properties and tradeoffs of large-scale wireless networking systems. In particular, Perkins' research is focused on the design and development of mathematical models and scalable protocols for a relatively new networking paradigm called "mobile ad hoc networks."

Unlike existing wireless networks, such as cellular networks used with PDAs and cell phones, MANETs will not depend on centralized base stations to perform functions such as call routing and handoffs. Instead, mechanisms are being developed to allow mobile devices to self-organize and work on their own.

Perkins said the research was first intended to help the military. "Ideally, each soldier could have a wireless device, which easily recognizes and communicates with similar devices without the need for a centralized controller," he explained. "The general thinking is that if the centralized controller were to be destroyed, communications

between soldiers would be terminated." But commercial applications are also possible.

Perkins is the second assistant professor in CACS to receive the NSF award. In 2004, Dr. Hongyi Wu earned it for his work in streamlining and improving wireless technologies.