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# Marshall Star

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## ***Marshall Composite Used On UAH's Concrete Canoe***

Traditional technology sharing involves the transfer of ideas and information and the Marshall Center has long been engaged in such transfer activities with industries nationwide and state governments in the southeastern United States. As part of this program, Marshall recently shared with the University of Alabama in Huntsville (UAH) out-of-date composite materials for use in an upgraded version of a concrete canoe project that has already won UAH recognition throughout the country.

Several of the major universities in the nation participate in the annual concrete canoe competition. Amid such heavyweights as the University of Michigan, the University of Maryland and a number of major California schools, UAH has not only won the Southeast Region concrete canoe races five out of six years, but has challenged and beaten all but one of the top schools in the country.

"This year's Southeast Regional competition was hosted by Georgia Tech University in Atlanta. Winning that competition qualifies UAH to compete at the national level in Sacramento later this month," said Jeff Lindner of the Structures and Dynamics Laboratory at Marshall, a graduate student at UAH and member of the school's concrete canoe paddling team.

"We nearly beat last year's champion, the University of California at Berkeley, and we're out to get them this year."

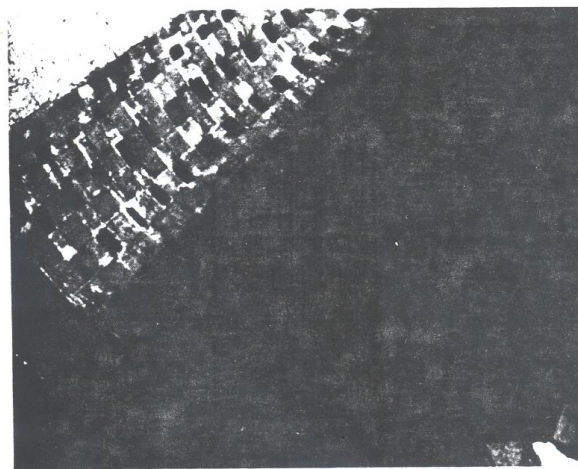
Fueling the team's chances of capturing the title are composite materials supplied to the school by the Marshall Center's Technology Utilization Office. Through his own work with composites, Lindner learned of the existence of spent graphite materials at Marshall which, while out-of-date for use on Marshall projects, were still more than useful on a concrete canoe. The UAH American Society of Civil Engineers faculty advisor, Dr. John Gilbert, garnered the support of Marshall Center Director Jack Lee and worked with the Marshall Technology Utilization Office on a Space Act provision that allows the composite material to be transferred to UAH.

"We then created the mold for the boat, baked it in an oven and poured the concrete resulting in a concrete canoe weighing 78.5 lbs.," Lindner said. The advantages of graphite make it much stronger and 10 - 70 percent lighter than steel, depending on the application, according to Lindner. "The graphite can be obtained

as a prepreg tape so that fibers can be easily contoured to the shape of the canoe and the tape can be selectively layered to produce sections having a high flexural strength," he said.

The UAH team with Lindner in tow take to the California waters June 26 for the competition. Much of UAH's development is common knowledge around the concrete canoe community, but certain aspects of their canoe remain a secret - aspects Lindner hopes will mean the difference between finishing first or being also-rans.

Originally, the UAH students began constructing and racing concrete canoes in an effort to further their knowledge and understanding of various engineering skills.



*A Canoe Made of Concrete - A close-up of the Marshall-donated composite material used to fashion the concrete canoe used by the University of Alabama in Huntsville in its canoe competition this year.*