

3-5-1991

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Recommended Citation

"UD Researchers Studying Beetles to Design Better Aircraft" (1991). *News Releases*. 7219.
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The University of Dayton

News Release

March 5, 1991
Contact: Jim Feuer

UD RESEARCHERS STUDYING BEETLES TO DESIGN BETTER AIRCRAFT

DAYTON, Ohio -- Engineers may be able to design aircraft components that are stronger, more lightweight and more tolerant to damage--by borrowing structural designs from beetles.

University of Dayton researchers are studying the outer shell, or exoskeleton, of the bessbeetle, a thumb-sized black beetle known for its strong, waterproof shell that protects the body and its delicate pair of wings.

Steve Gunderson, assistant materials scientist in the Nonmetallic Materials Division of the University of Dayton Research Institute (UDRI), and other UDRI researchers are applying some of the novel design characteristics observed in the bessbeetle to designs of synthetic composite materials used in aircraft structures.

Of all the natural composites the UDRI researchers reviewed, the bessbeetle exoskeleton most closely resembled synthetic composites used in aircraft structures, says Gunderson. According to Gunderson, Mother Nature took relatively simple materials--protein and sugar--and combined them in just the right way to make the beetle's outer shell strong, stiff and tough, but still lightweight.

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Bessbeetle: page 2

"In their pure form, (protein and sugar) are not as structurally sound," he said. "It's the way nature puts them together that makes them strong."

After the tests are completed, UDRI researchers will determine the benefits of beetle-like designs on synthetic composites and identify those that show the most promise. UDRI is conducting the research for the Air Force Office of Scientific Research in Washington, D.C., and the Materials Laboratory of the Wright Research and Development Center at Wright-Patterson Air Force Base.

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For media interviews, contact **Steve Gunderson** at (513) 255-1142. Gunderson will not be reachable March 11-15 and April 1-5.