Discovery might improve titanium alloys

October 20 2005

Two University of Maryland scientists say they've developed a modification of titanium alloys that will expand their uses and make them safer.

Titanium alloys are used in products such as biomedical implants and aircraft, mainly because of their high strength, low density and corrosion resistance.

But titanium alloys will deform over time, even under relatively low stresses at room temperature.

Now the University of Maryland engineers have determined that, by altering the microstructure of the alloys, it's possible to make titanium components more resistant to deformation.

Until recently, such deformation has been poorly understood. But at the university's A. James Clark School of Engineering, graduate student Greg Oberson and Sreeramamurthy Ankem, associate professor of materials science and engineering, have, discovered a small variation in the amount of oxygen in titanium alloys can have a significant effect on deformation.

The discovery is expected to help researchers in other fields, such as ceramics and even high-temperature superconductors, develop advanced materials for a variety of applications.

Oberson and Ankem describe their findings in the current issue of the

journal Physical Review Letters.