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**Media Release**  
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## **Goodyear and NASA to develop moon tyre**

Goodyear has announced that it is working with NASA Glenn Research Center (GRC), as part of a funded program by NASA's Innovative Partnership Program (IPP), to develop non-pneumatic tyres for use first on the moon, and eventually on Mars.

As NASA Principle Investigator, Vivake Asnani, said the objective is to significantly evolve tyre technology and take its capabilities to the rest of the universe.

"Because of the unique atmospheric characteristics of the operational environment, the basic rubber-pneumatic design used on earth does not have the same utility on the moon," said Asnani.

"The challenges associated with creating a lunar tyre are further complicated by the fact that there are no lunar roads. Lunar tyres need to be designed to develop traction on sandy undulated terrain, in regions that humans have never even seen up close. Plus, the prospect of an immobilising 'flat tyre' would be devastating to the mission."

Goodyear engineers are used to thinking out-of-the-box in terms of developing entirely new technologies, so thinking "out-of-this-world" was not a stretch, according to Joe Gingo, Goodyear's executive vice president and chief technical officer.

"The mission performance goals for these tyres will push known tyre technology well beyond its comfort zone and I am confident we have the capabilities to do that," Mr Gingo said.

Goodyear has been evaluating the Apollo lunar rover wheel, prototype pneumatic tyres and non-pneumatic concepts to build a baseline understanding of the mechanics of these wheels and the challenges of the lunar environment.

In the 1960s, NASA funded more than 10 years of intensive research at Goodyear and General Motors to develop the wire mesh moon tyre for the Apollo Lunar Roving Vehicle (LRV). The LRV tyre was woven out of piano wire, in order to provide a soft, springy surface to contour to the ground and provide good ride quality. It looks a bit like the skeleton of an earth tyre.

This approach worked very well, because each LRV tyre was only required to support about 27 kilograms of weight, since all things weigh six times less on the moon than on earth, and be used for a maximum of 120 km. The new fleet of lunar vehicles will require tyres to support about 10 times the weight and last for up to 100 times the distance. A tyre that would meet such requirements would also be useful for commercial applications on earth.

To extend the utility of this wire mesh tyre, the team is first analysing the original design using computer modeling tools. Furthermore, exact replicates of the tyres are being manufactured and tested to find out how and why their load and life are limited. Essentially, the tyres will be loaded and cycled until they fail. The Goodyear tyre designers and research engineers at NASA GRC will

then iteratively design, build, and laboratory-test concept tyres to mitigate the failures. The exact nature of these design changes has not been disclosed yet.

A set of 12 tyres will be built by winter of 2009 and demonstrated on the new NASA Chariot roving vehicle at the Johnson Space Center in Texas, US.

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**About Goodyear**

Goodyear is the world's largest tyre company. The company was formed in 1898 and manufactures tyres, engineered rubber products and chemicals in more than 80 facilities in 28 countries around the world.

The Goodyear tyre range incorporates technology and advances in tyre design gathered from Goodyear's research and development teams located around the world. The company manufactures tyres for many applications including car, van, truck, farm, earthmover and aviation.

For more information on Goodyear, visit [www.goodyear.com.au](http://www.goodyear.com.au)

