

## New Magnesium Alloys for High Temperature Application

### KEY FEATURES

- Less expensive than commercial alloys (~25% less than WE43 and ~57% less than QE22 on average).
- The UQ novel alloys are lighter than commercial alloys (7% lighter than WE43 and 10% lighter than QE22 on average)

### ADVANTAGES

- Much lighter, cheaper than current alloys
- Suitable for aerospace and automotive industries.
- Easy to produce at current plants, no need for any specific process.
- Stress relaxation similar to commercial alloys.

### CHALLENGE

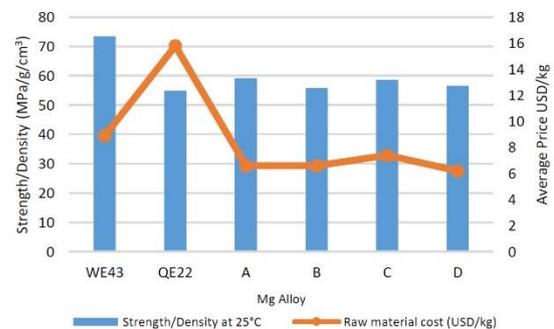
Due to their relatively light weight and high strength, there is an increasing demand from automobile and aerospace industries for magnesium alloys. Reduced weight of engines, wheels and other components leads to higher performance, lower fuel consumption and reduced emissions.

In recent decades, several commercial magnesium alloys have been developed. Some of these are widely used, but still suffer from poor mechanical properties at high temperatures. QE22 and WE43 are available in the market and are designed for elevated temperature applications, however their high costs are a barrier to many applications.

### SOLUTION

Researchers at The University of Queensland have developed a new series

of magnesium alloys with higher strength/density ratio than QE22, but with equivalent stress relaxation values at high temperature (180°C), while the raw material cost is much lower than for QE22 and WE43, as shown below.



Alloy	WE43	QE22	A	B	C	D
@ 135 MPa	2.9	7.3	3.1	3.7	2.8	3.4
@ 175 MPa	2.5	5.7	6.2	7.1	5.2	5.0

### COMMERCIALISATION OPPORTUNITY

A provisional patent application has been filed for this technology and it is ready for prototype development. UniQuest is seeking industry partners to assist in development, and licensees interested in taking this unique, novel technology to a global market.

### PARTNERSHIPS

UniQuest is Australia's leading university commercialising entity, specialising in global technology transfer and facilitating business access to the world-class expertise, intellectual property and facilities of UQ.

The main commercialisation company of



**THE UNIVERSITY  
OF QUEENSLAND**  
AUSTRALIA

The University of Queensland (UQ) ranks in the top 50 as measured by the Performance Ranking of Scientific Papers for World Universities. The University also ranks 51 in the QS World University Rankings, 47 in the US News Best Global Universities Rankings, 60 in the Times Higher Education World University Rankings and 55 in the Academic Ranking of World Universities.

## ABOUT UNIQUEST

UniQuest Pty Limited is Australia's leading university commercialisation entity, commercialising the intellectual property of The University of Queensland. It has created more than 80 companies from its intellectual property portfolio, and, together with its start-ups, has raised more than A\$600 million to take university technologies to market. UQ technologies licensed by us – including UQ's cervical cancer vaccine technology and image technology in MRI machines - Have resulted in more than US\$15.5 billion in gross product sales.

## CONTACT

**Dr Mohammadali Farjoo**

Associate Director, Commercial Engagement,  
Engineering and IT,

Phone: +61 (7) 3365 4037

Mobile: +61 (4) 5648 9695

E-mail: [m.farjoo@uniquet.com.au](mailto:m.farjoo@uniquet.com.au)

[www.uniquet.com.au](http://www.uniquet.com.au)

78 Staff House Rd, The University of Queensland,  
Brisbane, Australia 4072

