

Materials Australia Awards Professor Ma Qian their Highest Honour: the Silver Medal

Source: Sally Wood

Materials Australia is pleased to announce that Professor Ma Qian has been awarded the institute's prestigious Silver Medal..

The Materials Australia Silver Medal is presented for outstanding contributions to the advancement of materials science and engineering through management, teaching, innovation, development or research.

According to Materials Australia President, Dr Roger Lumley, CMatP, "Over the course of his career, Professor Ma Qian has devoted his life to the study of materials. He has made significant contributions in the fields of physical metallurgy, additive manufacturing, solidification processing, powder metallurgy, metallic biomaterials and thermodynamics of materials."

"Professor Qian's research has made major contributions to industry, impacting on manufacturing processes such as casting, powder sintering, metal injection moulding and additive manufacturing. He is a most deserving recipient of Materials Australia's highest honour: the Silver Medal."

"Materials Australia would like to congratulate Professor Qian on his outstanding achievements and acknowledge him as a worthy winner of the 2022 Materials Australia Silver Medal," said Dr Lumley.

Innovative Research

With a career that spans over 40 years, Professor Ma Qian is a Distinguished Professor of the School of Engineering at the Royal Melbourne Institute of Technology (RMIT University) in Melbourne. He joined RMIT University in 2013, having been the Reader in Materials Engineering, in the School of Mechanical and Mining Engineering at The University of Queensland. Prior to this, he held various academic positions, including at Portsmouth University and Brunel University in the United Kingdom, the National University of Singapore, Kyushu Institute of Technology in Japan, and Tsinghua University in China.

Professor Qian began his research at the CAST Cooperative Research Centre (CRC) on aluminium wrought alloys for Comalco before moving onto the development of a superior Magnesium Zirconium (Mg-Zr) grain refining master alloy for Australian Magnesium. The resulting master alloy was patented, and Professor Qian spent time in the USA optimising the consumption of Zirconium and the performance of the process of grain refining commercial castings. The master alloy is currently available from Magontec, and is considered to be the best performing master alloy in terms of effectiveness and cost.

Along with his team, Professor Qian has also recently developed an ultrasound assisted metal 3D printing process which could be applied to improve the mechanical strength of titanium alloy 3D printing. The printing of 3D metal is widely used in aerospace and biomechanical applications. However, it was determined that the use of ultrasound addressed the long-lasting challenges in fusion-based metal 3D printing. It is hoped that this could eventually become a commercially useful process for 3D printing of small metal parts. The release of this research saw an audience reach of 146 million people within three weeks of publication.

More recently, Professor Qian and his team have developed a robust bulk micro-nano hierarchical copper material possessing exceptional bactericidal efficacy. This new copper surface can eliminate golden staph in two minutes—120 times faster than a normal copper surface. The audience reach within three weeks of the publication of this work through a RMIT news release was 276 million.

Conferences and Publications

Alongside his research fellows, PhD students and collaborators, Professor Qian has published 291 peer-reviewed journal articles and four Elsevier books on titanium alloys, including *Titanium Powder Metallurgy: Science, Technology*



and Applications, Light Alloys, Titanium in Medical and Dental Applications, and Titanium for Consumer Applications.

Professor Qian has received nine research awards including the 2006 American Society for Metals (ASM) Henry Howe Marion Medal, the 2003 TMS Light Metals Magnesium Technology Award, the inaugural 2003 Australian CAST-CRC Industry Partners Award, and the 2019 RMIT Engineering Executive Dean's Research Excellence Award - Level E (professorial level).

Professor Qian also serves as an Associate, Advisory and Series Editor for a number of well-respected journals and publications including *Acta Materialia, Scripta Materialia, and Elsevier Additive Manufacturing Book Series.*

Professor Qian holds a Bachelor of Engineering, a Master of Science, and a Doctorate of Engineering in Foundry Metallurgy, as well as a Postgraduate Certificate in Higher Education. He is also an elected Fellow of the American Society for Metals International (FASM), the World's foremost professional society for materials scientists, engineers and technicians.

Materials Australia would like to congratulate Professor Qian on his outstanding achievements and acknowledge him as a worthy winner of the 2022 Materials Australia Silver Medal.