1. Record Nr. UNINA9910831013503321 Autore Leonard Aeriel **Titolo** Magnesium Technology 2024 [[electronic resource] /] / edited by Aeriel Leonard, Steven Barela, Neale R. Neelameggham, Victoria M. Miller, Domonkos Tolnai Cham:,: Springer Nature Switzerland:,: Imprint: Springer,, 2024 Pubbl/distr/stampa **ISBN** 3-031-50240-X Edizione [1st ed. 2024.] Descrizione fisica 1 online resource (223 pages) Collana The Minerals, Metals & Materials Series, , 2367-1696 Altri autori (Persone) BarelaSteven NeelamegghamNeale R MillerVictoria M TolnaiDomonkos 691.7 Disciplina Soggetti Metals **Building materials** Aerospace engineering Astronautics Vehicles Industrial engineering Production engineering Steel, Light Metal Metals and Alloys Aerospace Technology and Astronautics Vehicle Engineering Industrial and Production Engineering Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Intro -- Preface -- Contents -- About the Editors -- Session Chairs --Nota di contenuto Reviewer Pool -- Part I Corrosion and Coatings -- 1 Different Analytical Methods to Determine the Influence of Pitting on the Residual Performance of Mg Alloys as Implant Materials -- 2 Effect of Heat Treatment on the Microstructure and Corrosion Properties of Mg-

15Dy-1.5Zn Alloy with LPSO Phase -- 3 Dissolution Rate Change of Dissolving Magnesium in a Deoxygenated Environment -- 4 Evaluation

of Corrosion Performance of Friction Stir Processed Magnesium Alloys Using Multimodal Analysis Across Length Scales -- 5 Improved Formability and Corrosion Resistance of Pure Magnesium by Parts-Per-Million-Level Addition of Copper and Calcium -- 6 Investigating the Corrosion Response of Cast and Extruded ZK60 Magnesium Alloy Processed via Shear Assisted Processing and Extrusion -- 7 Corrosion Rates by Immersion and Calorimetry on the Example of Extruded Mg10Gd(1Nd)1La -- Part II Microstructural Evolution and Phase Transformations -- 8 Understanding the Influence of Ca and Zn on the Microstructure and Texture Evolution of Mg-(Ca, Zn) Alloys During Static Recrystallization -- 9 Microstructural Evolution Near Microcrack in AZ31 Mg Alloy Under Electropulses -- 10 Data Science Approach for EBSD Data Processing and Materials Design for Magnesium Alloy -- 11 Alloy Development, Microstructural, and Mechanical Behaviour of Mg-Ce Based Alloys -- 12 The Multi-Solute Solid Solution Behaviour of Magnesium Alloys and Their Application on Materials Design -- 13 Microstructural Evolution of Hot-Rolled AZ31 Mg Plate Induced by Electropulsing Treatment -- 14 An Integrated Computational and Experimental Study of Static Recrystallization in the Mg-Zn-Ca Alloy System -- Part III Deformation Mechanisms. 15 An Experimental Study on Twinning Behavior in Mg Alloys with

Different Solute Elements -- 16 In Situ Tomographic Investigation of the Combined Effect of Mechanical Load and Degradation on Mg2Y1Zn (Gd, Ag, Ca) -- 17 Quantifying the Role of Coarse Intermetallic Particles on Deformation Behavior -- 18 Investigations on Creep Behavior of Extruded Mg-Ca-Al Alloys -- 19 Cryogenic Deformation Behavior of a Dual-Phase Mg-Li Allov Investigated by In-Situ Neutron Diffraction -- 20 Experimental Observation of &lt -- c+a&gt --Dislocations on {1211} Plane in Submicron Magnesium -- 21 In-Situ Dynamic Investigation of Plastic Deformation Carriers in Magnesium and the Effects of Multifield -- Part IV Advanced Processing -- 22 Investigations on the Forging Behavior of Mg-Ca-Al Alloys -- 23 Ultrafine-Grained Magnesium Alloys Manufactured by Multi-axial Forging: Elucidating Mechanisms of Achieving Both High Strength and High Ductility -- 24 Enhancement of Mechanical Properties of Rolled AZ31 Alloy by Utilizing Ultrasonic Nano-crystalline Surface Modification (UNSM) Treatment and Heat Treatment -- 25 Research Toward Sintering Improvement During Press and Sinter Processing of Mg and Mg Alloy Powders -- 26 Low Anisotropy and High Ductility of Mg-Zn-Ce Allov Achieved by the Optimized Thermo-mechanical Process -- 27 Optimization of Bead Morphology for Cold Metal Transfer Wire Arc Additive Manufacturing of AZ31 Magnesium Alloy Wires -- 28 Development of High-Strength Mg-Gd-Y Alloy Based on Machine Learning Method -- Part V Primary Production, Recycling, and Modeling -- 29 A Succinct Method to Recycle WE43 Mg Alloys-From Wasted Chips to Consolidated Billets -- 30 A New Method to Produce High-Purity Magnesium with a Low Aluminum Content -- 31 Recycling of Magnesium Alloy Using the Gravity-Driven Multiple-Effect Thermal System (G-METS).

32 Production of Mg-MgSi Composites -- 33 Recent Advances in PRISMS-Plasticity Software for Simulation of Deformation in Mg Alloys -- 34 Energetic Terms Associated with Twin Nucleation in Magnesium -- 35 Thermodynamics of Mg-Y-O Alloys and Segregation at the Mg/MgO Interface -- Part VI Biomedical Applications -- 36 Assessment of Magnesium Wire Coatings for Absorbable Medical Devices -- 37 Processing and Characterization of Mg Microtubes for Biodegradable Vascular Stents -- 38 Severe Plastically Deformed Mg-Zn-Zr-RE Alloy Developed as a Biomaterial -- 39 The Effect of Powder

Size and Morphology on the Sinterability of Bioresorbable Mg-Sr/Ca Alloys -- 40 Impact of Thermo-Mechanical Processing on Structure-Property Relationships for the Biodegradable ZX10 Mg Alloy -- 41 Examination of Cycling Rate Sensitivity in Magnesium Alloys in Fatigue and Corrosion Fatigue -- 42 Magnesium Ion Embedded and Graphene Modified Vanadium Pentoxide Cathode for Superior Magnesium Storage Performance -- Part VII Poster Session -- 43 Porosity and Mechanical Properties of Squeeze Cast and Permanent Mold Cast Wrought Mg Alloy AZ31 -- Author Index -- Subject Index.

## Sommario/riassunto

The Magnesium Technology Symposium at the TMS Annual Meeting & Exhibition is one of the largest yearly gatherings of magnesium specialists in the world. Papers represent all aspects of the field, ranging from primary production to applications and recycling. Moreover, papers explore everything from basic research findings to industrialization. Magnesium Technology 2024 is a definitive reference that covers a broad spectrum of current topics, including novel extraction techniques; primary production; alloys and their production; integrated computational materials engineering; thermodynamics and kinetics; plasticity mechanisms; cast products and processing; wrought products and processing; forming, joining, and machining; corrosion and surface finishing; fatigue and fracture; dynamic response; structural applications; degradation and biomedical applications; emerging applications; additive manufacturing of powders; and recycling, ecological issues, and life cycle analysis.