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Authors: Han Zhang, Dongdong Gu, Jiankai Yang, Donghua Dai, Tong Zhao, Chen Hong, Andres Gasser, Reinhart Poprawe



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Selective laser melting of rare earth element Sc modified aluminum alloy:

Thermodynamics of precipitation behavior and its influence on mechanical properties

Han Zhang^{a,b}, Dongdong Gu^{a,b,*}, Jiankai Yang^{a,b}, Donghua Dai^{a,b}, Tong Zhao^c, Chen Hong^c, Andres Gasser^c, Reinhart Poprawe^c

^a College of Materials Science and Technology, Nanjing University of Aeronautics and Astronautics, Yudao Street 29, Nanjing 210016, Jiangsu Province, PR China;

^b Jiangsu Provincial Engineering Laboratory for Laser Additive Manufacturing of High-Performance Metallic Components, Nanjing University of Aeronautics and Astronautics, Yudao Street 29, Nanjing 210016, Jiangsu Province, PR China

^c Fraunhofer Institute for Laser Technology ILT/Chair for Laser Technology LLT, RWTH Aachen, Steinbachstraße 15, D-52074 Aachen, Germany

*Corresponding author. Tel./fax: +86 25 52112626;

E-mail: dongdonggu@nuaa.edu.cn (D. Gu).

Highlights

- Selective laser melting was utilized to fabricate Sc and Zr modified Al-Mg alloy.
- Different precipitation behavior between various scan speeds are characterized by SEM and TEM.
- Significant improvement of hardness is evaluated and explained under a relative low scan speed.
- Relationships between scan speed, convection flow, precipitate distribution, and the resultant mechanical properties are elucidated.

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