Additive Manufacturing of an AlSi40 Mirror Coated With Electroless Nickel for Space Applications

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Advanced Manufacturing (AM) has the potential to improve existing technologies and applications wrt performance, mass and costs. In the context of the SME4ALM initiative, the company Kampf Telescope Optics GmbH (KTO) in cooperation with Fraunhofer Institute for Material and Beam Technology (IWS) have assessed the feasibility of AM to build a high-performance optical mirror for space applications.
A mirror design concept suitable for IR/NIR observation out of AlSi40 and Nickel-Phosphorus (NiP) was selected as baseline for AM. The development approach was divided into determination of manufacturing parameters and characterisation of printed AlSi40, development of AM specific mirror design and manufacturing of an AM mirror demonstrator.