



- 1 *Multi-material demonstrator
(2.1293, 1.2709)*
- 2 *Processing tungsten*
- 3 *Metallography, light microscopy*

ADDITIVE MANUFACTURING MATERIALS QUALIFICATION, HEAT TREATMENT AND CRACK INTERFACE ANALYSIS

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The focus of additive material processing at Fraunhofer IGCV is on metallic and ceramic materials. We process carbides, ceramics, tool and case-hardening steels as well as nickel-based and aluminium materials. In our multimaterial process, material combinations such as copper/case-hardening steel, aluminium/ceramic and tungsten carbide/copper are processed together.

With our knowledge from numerous successful research and industrial projects, we gladly advise you on material suitability and possible process properties for laser beam melting, laser deposition welding and cold gas spraying. We will walk the path of material qualification of new materials with you and support you in developing suitable heat treatment cycles for your components. In addition to adapting and selecting the optimum heat treatment for additive

microstructures, the AM process can also be optimized for heat treatment (e.g. for case-hardening). We identify AM-specific microstructures resulting of laser beam melting and cold gas spraying metallographically. In addition to light microscopy, we perform fracture surface analysis using scanning electron microscopy (SEM).

At a glance:

Materials qualification, process parameter and heat treatment cycle development, crack interface analysis

Based on our comprehensive process understanding in additive manufacturing, we determine the relation between process and failure behavior in the testing of additive specimens, components and structures.

Get in touch with us!