

Accepted Manuscript

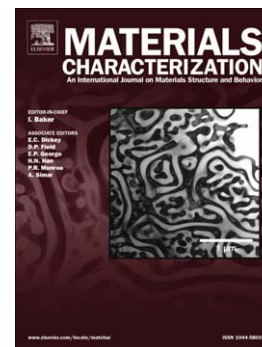
AM Metal Substrates for Inkjet-Printing of Smart Devices

Lisa-Marie Faller, Matic Krivec, Anze Abram, Hubert Zangl

PII: S1044-5803(17)31627-3
DOI: doi:[10.1016/j.matchar.2018.02.009](https://doi.org/10.1016/j.matchar.2018.02.009)
Reference: MTL 9053

To appear in: *Materials Characterization*

Received date: 28 June 2017
Revised date: 31 January 2018
Accepted date: 6 February 2018



Please cite this article as: Faller Lisa-Marie, Krivec Matic, Abram Anze, Zangl Hubert, AM Metal Substrates for Inkjet-Printing of Smart Devices, *Materials Characterization* (2018), doi:[10.1016/j.matchar.2018.02.009](https://doi.org/10.1016/j.matchar.2018.02.009)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

AM Metal Substrates for Inkjet-Printing of Smart Devices

Abstract

A study to characterize surface and structural properties of 3D-printed metal substrates for multilayer inkjet-printing is presented. Such substrates can enable and alleviate the fabrication of smart and functional packages, implants or spare parts. For the characterization, a multilayer structure composed of an insulating layer and a superposed conductive layer is inkjet-printed onto the various 3D-printed metallic substrates. The printing is done using equivalent settings for all substrates. The characterization is based on microscopic and Focused Ion Beam (FIB) images, as well as profilometer and contact angle measurements of the substrates. Furthermore, microscopic images and four-point-probe resistance- and profilometer measurements are carried out, to gain insight into the quality of the multilayer print. We show the diversity in surface and structural properties of 3D-printed substrates, also for those fabricated using the same process. Also, the 3D-printed samples exhibit different wettability properties than metals processed using standard processes. Finally, we can also demonstrate the suitability of selected substrates for inkjet-printing.

Keywords: 3D-printed metals, Surface characterization, Profilometer measurements, FIB measurements

First and corresponding author:

Lisa-Marie Faller
 Institute of Smart System Technologies
 Alpen Adria Universität Klagenfurt
 Universitätsstrasse 65-67
 9020 Klagenfurt, Austria
Email: Lisa-Marie.Faller@aau.at
Phone: +4346327003563
URL: www.aau.at/sat

Third author:

Anze Abram
 Jozef Stefan Institute
 Jamova Cesta 39
 1000 Ljubljana, Slovenia
Email: Anze.Abram@ijs.si

Second author:

Matic Krivec
 Carinthian Tech Research (CTR)
 Europastrasse 12
 9500 Villach, Austria
Email: Matic.Krivec@ctr.at

Fourth author:

Hubert Zangl
 Institute of Smart System Technologies
 Alpen Adria Universität Klagenfurt
 Universitätsstrasse 65-67
 9020 Klagenfurt, Austria
Email: Hubert.Zangl@aau.at

Download English Version:

<https://daneshyari.com/en/article/11020101>

Download Persian Version:

<https://daneshyari.com/article/11020101>

[Daneshyari.com](https://daneshyari.com)