



Independent Global Assaying Services

Client:
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 Turkey

Date: 26.05.2021

Certificate of Analysis No.: 0004253

Goods: Copper Powder
Quantity: approx. 20g*
Sample: 6g taken by IGAS research

**according to information given by customer the sample was taken from 50kg*

Measured with ICP/OES
Result of Analysis:

Element	Measured Value [ppm]
Ag	14
Al	< 1
As	.3
Au	< 0,5
B	< 0,5
Ba	< 1
Bi	< 0,5
Ca	< 1
Cd	< 0,5
Co	< 0,5

Element	Measured Value [ppm]
Cr	< 0,5
Fe	4
Hg	< 1
K	< 1
Li	< 0,5
Mg	< 1
Mn	< 1
Mo	< 1
Na	< 1
Ni	< 0,5

Element	Measured Value [ppm]
P	< 4
Pb	1
S	20
Sb	2
Sn	< 0,5
Sr	< 1
Ti	< 0,5
V	< 0,5
Zn	< 1
Zr	< 0,5

The chemical purity, based on the determined impurities Al, Cd, Fe, Mg, Mo, Ni, Sb, Ti, Zn is:
 (TU 1793-011-50316079-2004) **99,9994%**

The isotopic composition of this sample is that of natural copper:
⁶³Cu 69,1 % ± 0,05 % and ⁶⁵Cu 30,9 % ± 0,05 %

The material is not radioactive!



IGAS  research
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 D-38644 Goslar



Inhaber
Dr. Ernst Joachim Martin

Ust.Ident-Nr.: DE267751897
St.-Nr.: 21/128/02253

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BIC (Swift): GENODEF1OHA

Chemical analysis of copper powder from a sample, supplied by SIR Polimer Ithalat Ihracat San. ve Tic. A.S.. according to the result of the analysis the material is of high purity (99,9994%).

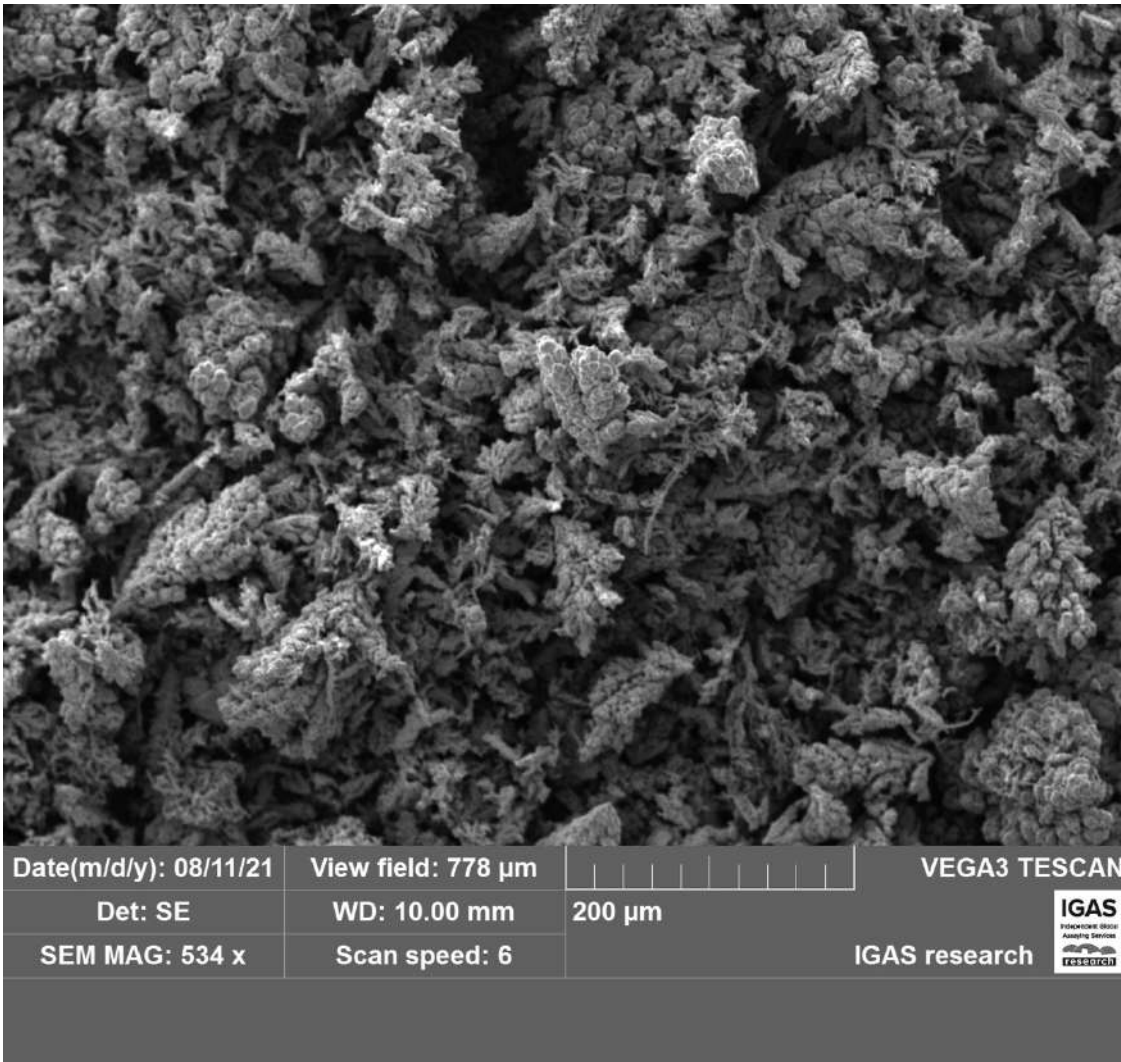


Fig. 1: Overview on a copper powder sample, taken from IGAS research No.: 0004253. The picture shows a wide range of aggregates, made up of primary particles, generally $<10\mu\text{m}$
The baseline of the picture is c. 0,8mm, the scale is 0,2mm.

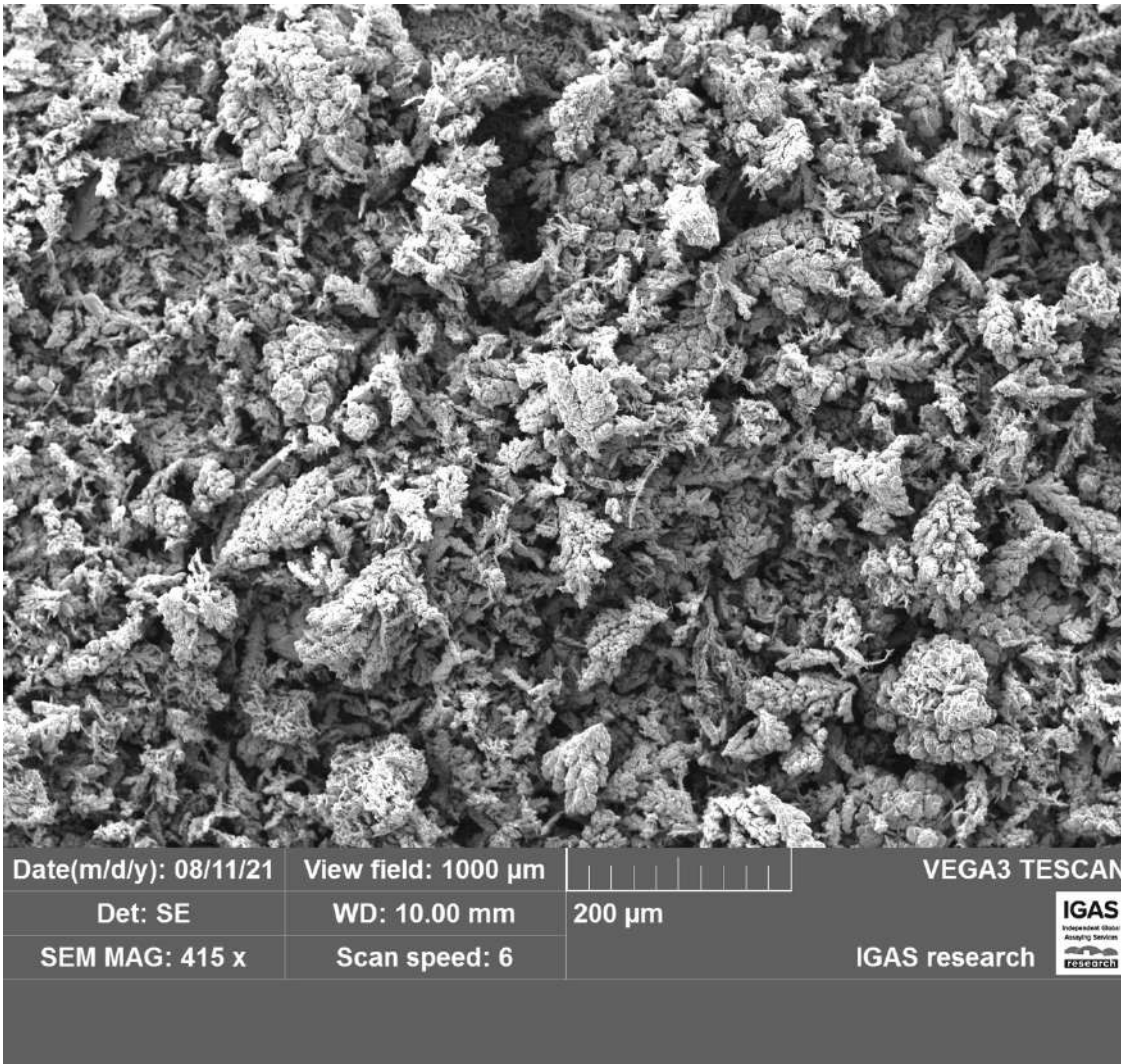


Fig. 2: Overview on a copper powder sample, taken from IGAS research No.: 0004253.

The picture shows a wide range of aggregates, made up of primary particles, generally <10µm.

The baseline is 1mm, the scale is 0,2mm.

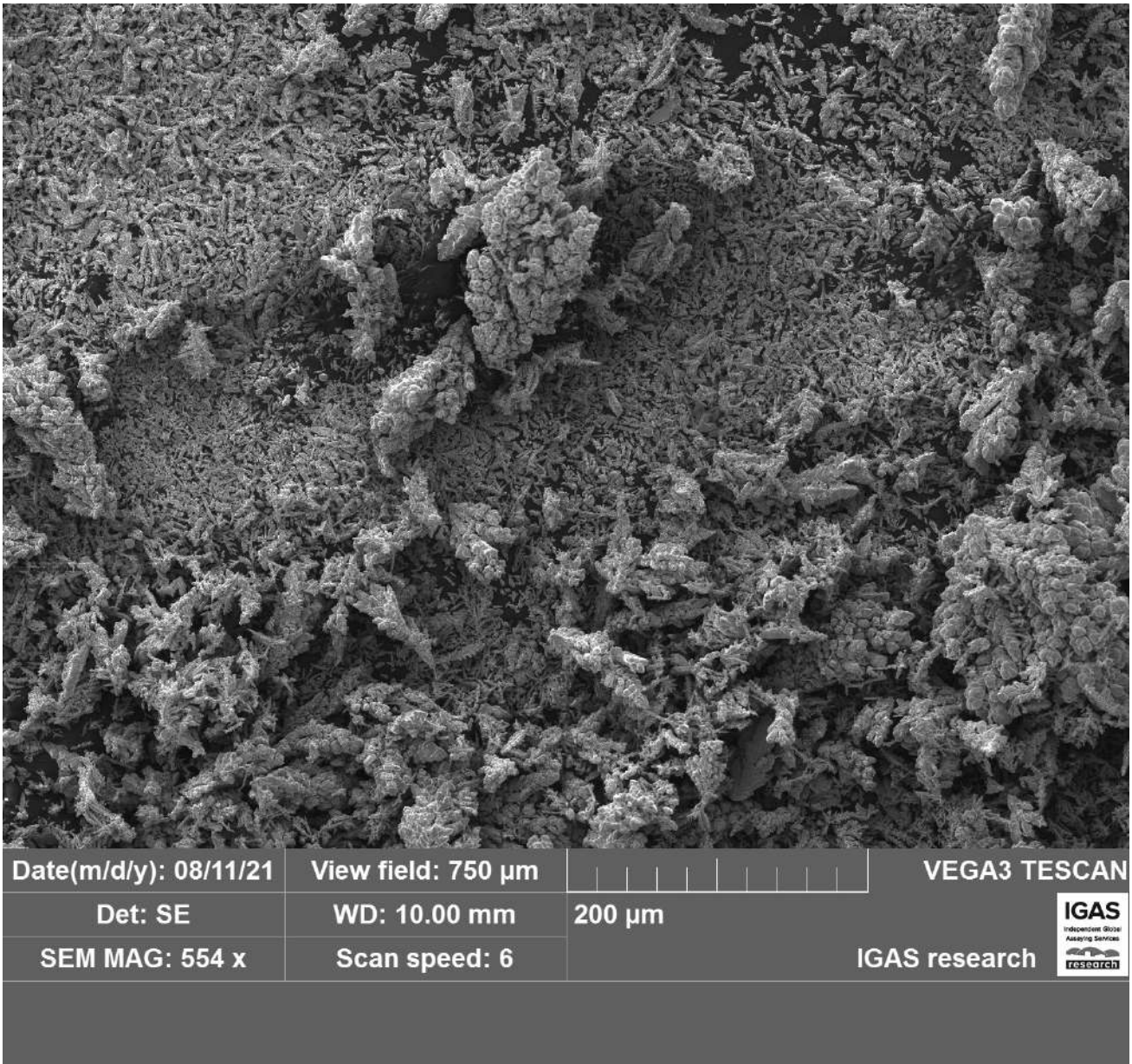


Fig. 3: Overview on a copper powder sample, taken from IGAS research No.: 0004253.

The picture shows a wide range of aggregates, made up of primary particles, generally <math><10\mu\text{m}</math>, especially in the upper part of the picture
The baseline is 0,75 mm, the scale is 0,2 mm.

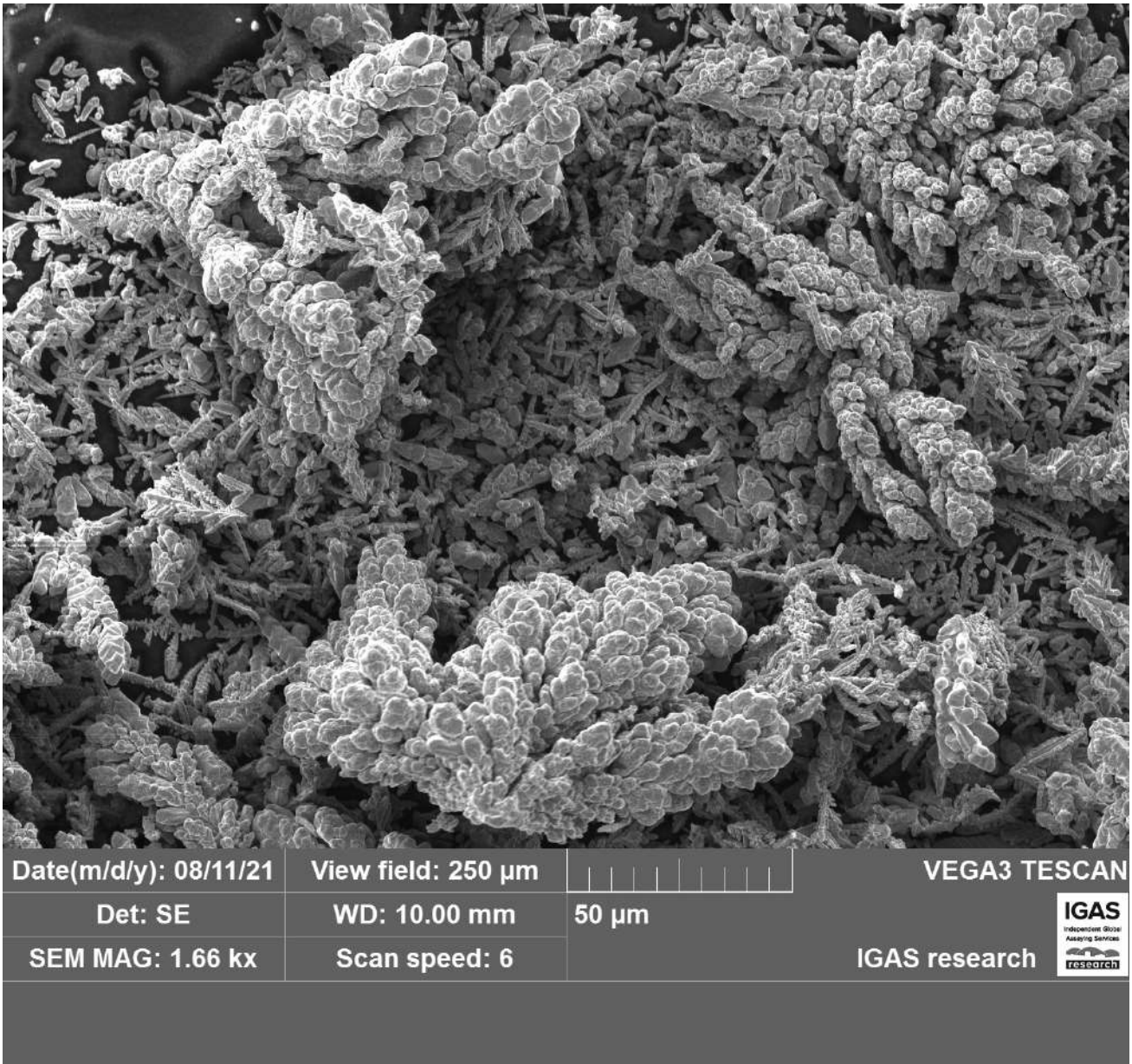


Fig. 4: Close view on the copper powder of IGAS research No. 0004253. Besides some larger aggregates there is a vast number of smaller particles of $\leq 5\mu\text{m}$ (e.g. centre of the picture).

The baseline is 0,25 mm, the scale is 0,05mm.

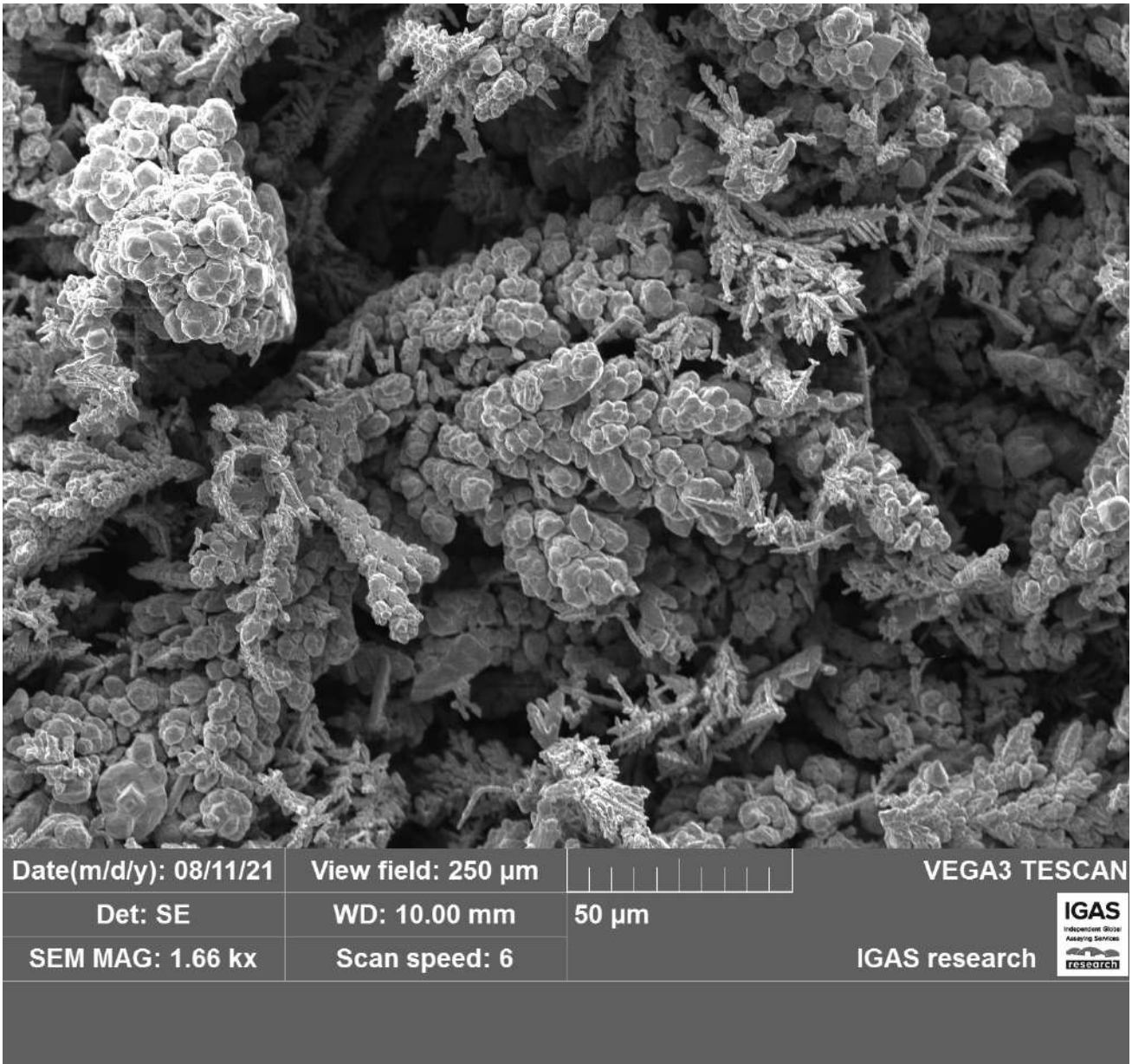


Fig. 5: closer view on the copper powder of IGAS research No. 0004253.
Larger aggregates are formed by smaller particles of generally $\leq 10\mu\text{m}$.
The baseline is 0,25 mm, the scale is 0,05mm.

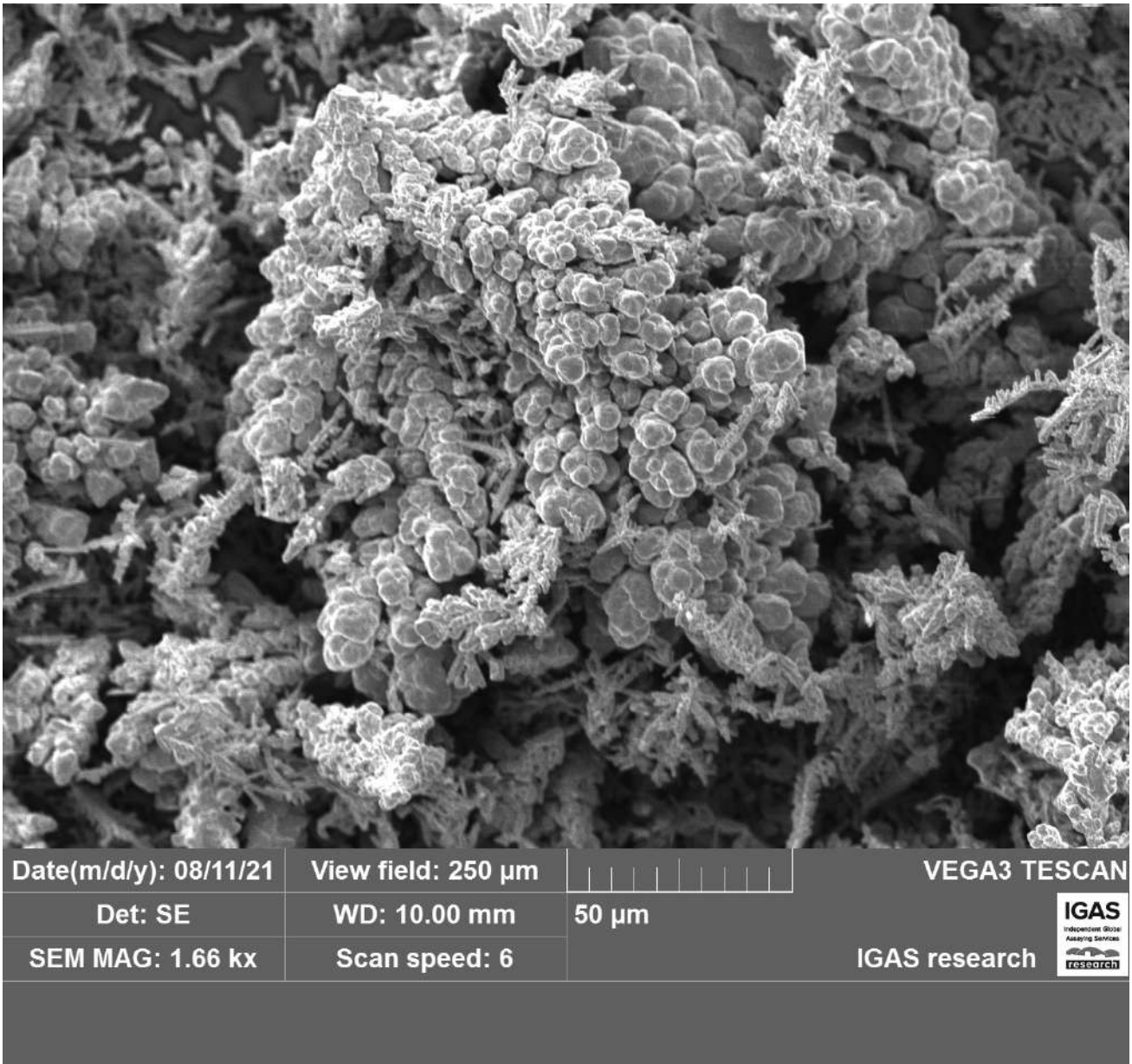


Fig. 6: closer view on the copper powder of IGAS research No. 0004253.
Larger aggregates are formed by smaller particles of generally $\leq 10\mu\text{m}$.
The baseline is 0,25 mm, the scale is 0,05mm.

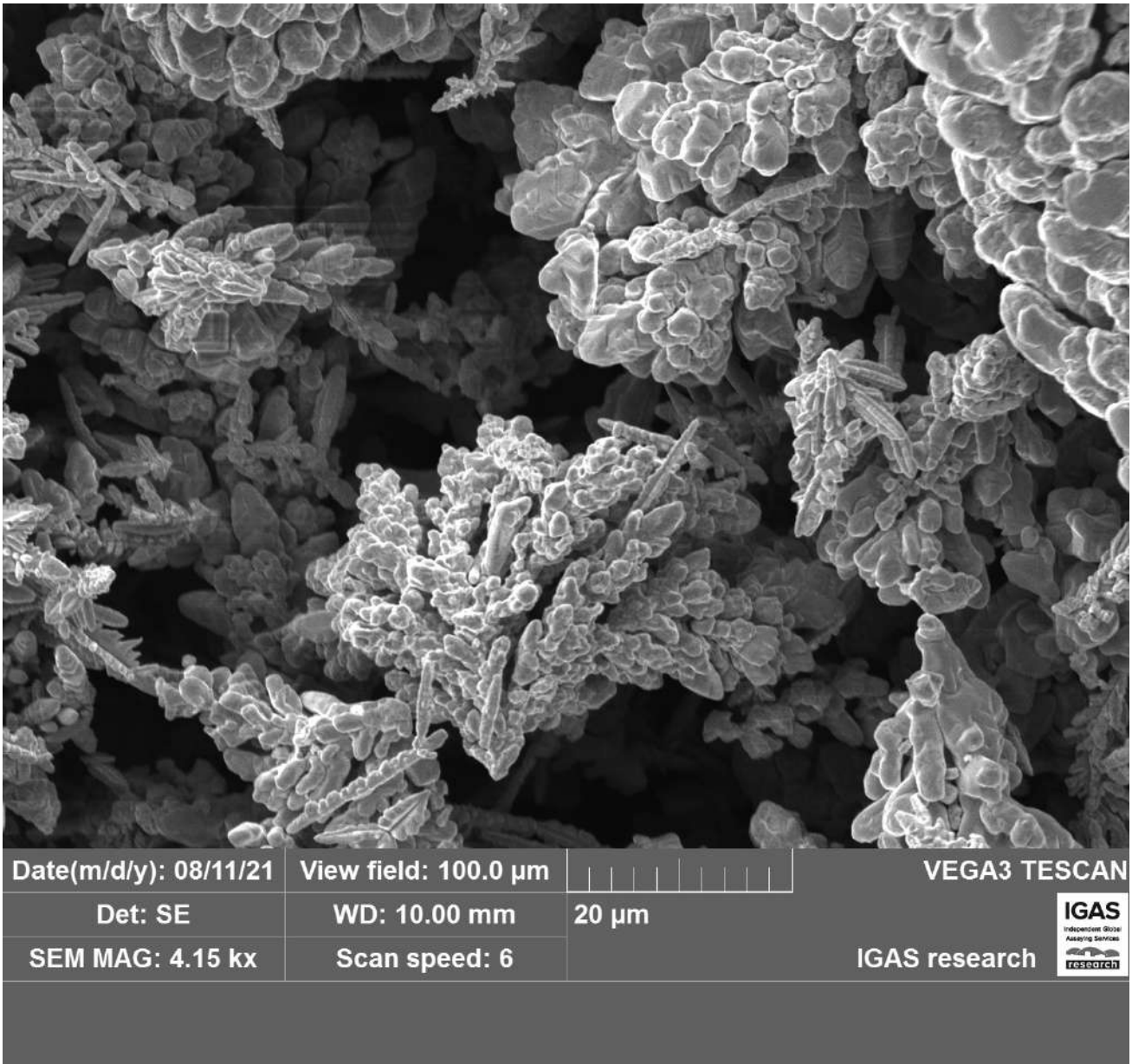


Fig. 7: closer view on the copper powder of IGAS research No. 0004253.
A number of aggregates are formed by smaller, rodshaped particles of generally <2 µm in thickness.
The baseline is 0,1 mm, the scale is 0,02mm.

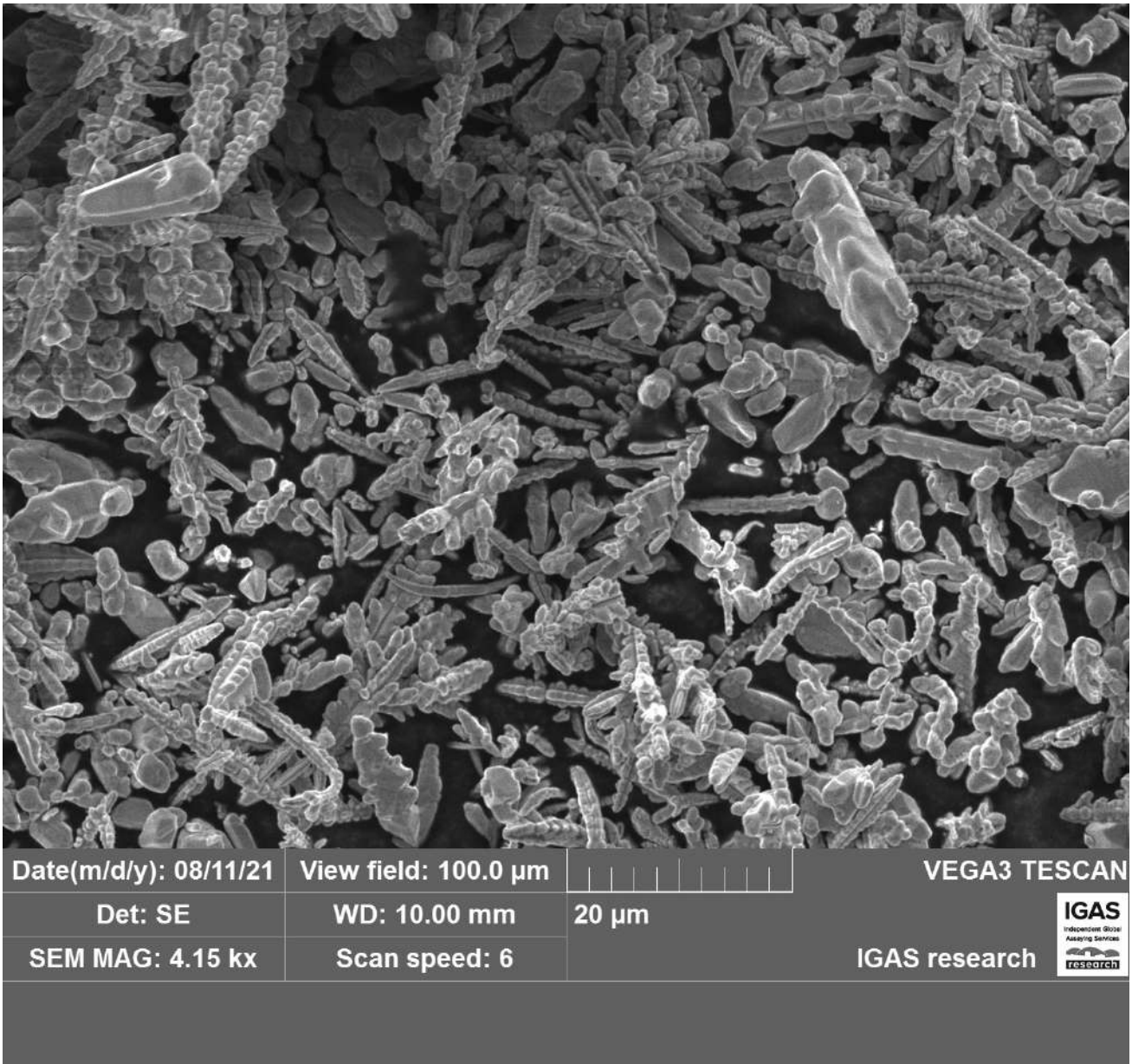


Fig. 8: closer view on the copper powder of IGAS research No. 0004253.
The picture shows a number of single, rodshaped particles of generally <math>< 2 \mu\text{m}</math> in thickness.
The baseline is 0,1 mm, the scale is 0,02mm.