

March 19, 2021

**DANISH  
TECHNOLOGICAL  
INSTITUTE**

# Product Report



Gregersensvej  
DK-2630 Taastrup  
+45 72 20 20 00  
info@teknologisk.dk  
www.teknologisk.dk  
www.nanoproducts.nu

March 19, 2021

**Product:** BaTiO<sub>3</sub> sub-micro particles DTI-BaTiO<sub>3</sub>-48

**Batch:** DTI-BaTiO<sub>3</sub>-48

**Description:** BaTiO<sub>3</sub> sub-micro particles

**Tests:** PXRD, SEM

**Storage:** Store material at room temperature and avoid direct light exposure. After use, dispose of remaining materials at local waste handling facility. Do NOT release material to aqueous environments.

**Conditions:** The work has been performed according to the general terms and conditions of The Danish Technological Institute. The test results are solely referring to the tested (examined) materials.  
Publication of extracts from the product report is allowed, if the testing laboratory has given a written approval.

**Place:** Danish Technological Institute, Taastrup,  
Nano Production and Micro Analysis

**Signature:** Zachary J. Davis  
Team Manager  
Phone: + 45 72 20 25 07  
Mail: [zjd@teknologsk.dk](mailto:zjd@teknologsk.dk)

**Tests**

- A X-ray diffractometer (XRD) equipped with a Cu X-ray source ( $K_{\alpha}$  wavelength 1.5406 Å). This instrument allows the crystalline phases in the powder samples to be analyzed (identification and relative quantification of phases).
- Scanning electron microscope (SEM) equipped with X-ray microanalysis facilities (EDX). This allows microstructure and element composition to be analyzed.

**Test results**

Table: average results

BATCH NAME	<b>DTI-BATIO3-48</b>
SEM SIZES	300 nm
PXRD AVERAGE CRYSTALLITE SIZES	30 nm
DLS AVERAGE PARTICLE SIZES	220 nm

**Documentation**

Figure: SEM

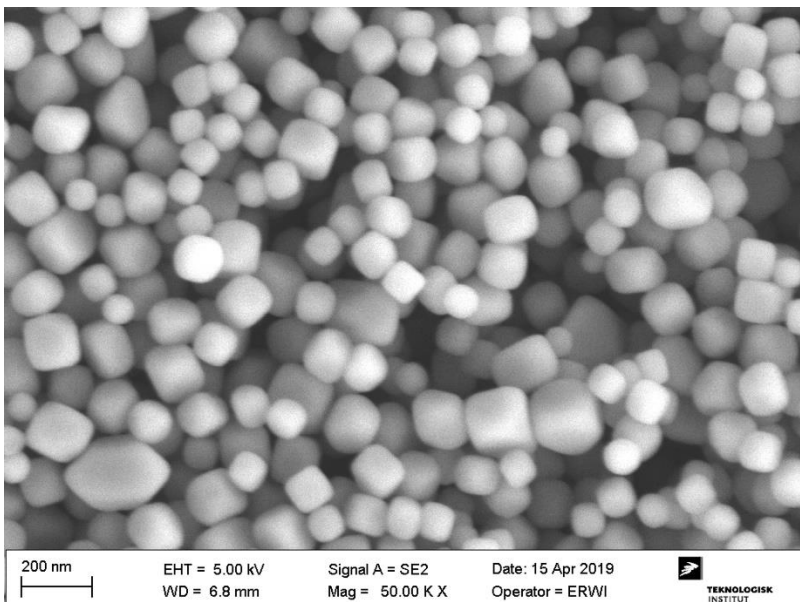


Figure: DLS

**Results**

	Size (d.n...)	% Intensity:	St Dev (d.n...
<b>Z-Average (d.nm):</b> 218.1	<b>Peak 1:</b> 232.4	95.1	90.55
<b>Pdl:</b> 0.254	<b>Peak 2:</b> 4704	4.9	777.4
<b>Intercept:</b> 0.851	<b>Peak 3:</b> 0.000	0.0	0.000

Result quality **Good**

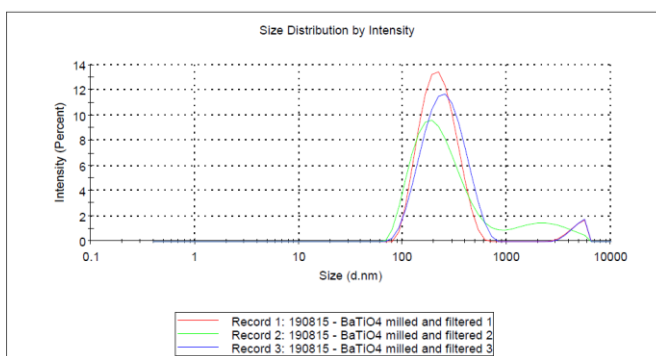
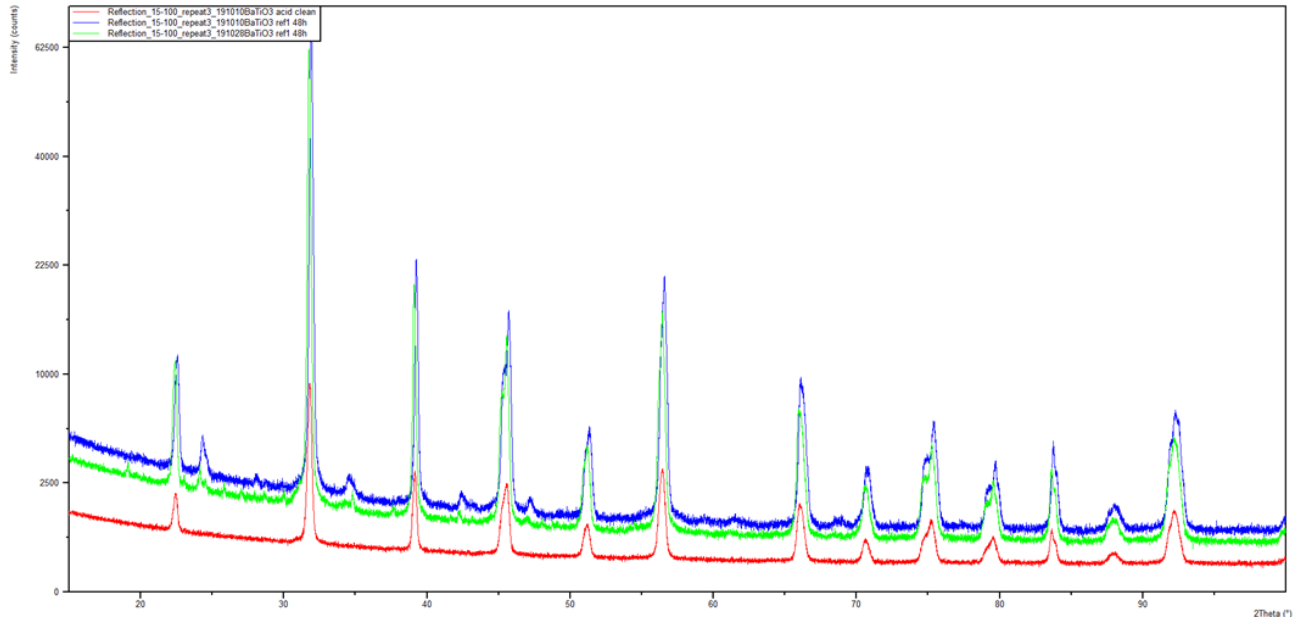


Figure: PXRD



With acid cleaning it is possible to remove the BaCO<sub>3</sub> contamination at 2theta=24°