

09.02.2021
BioNanoNet
Welcome Webinar



New process sensors for real time on-line ^{nano}particle characterization

nanomedicine
Biophysics



Bundesministerium
Digitalisierung und
Wirtschaftsstandort



European
Commission

Horizon 2020
European Union funding
for Research & Innovation

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Dipl. Ing. Gerhard PROSSLINER

BRAVE

A N A L Y T I C S

www.braveanalytics.eu

BRAVE Spin-off



Spin-off founded 8/2020

Project

BRAVE

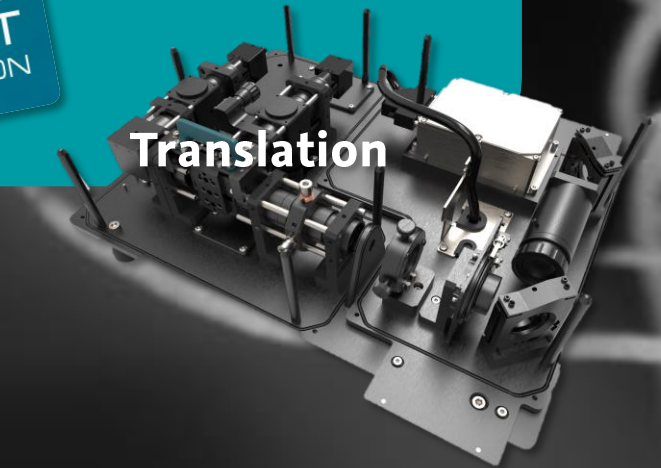
A N A L Y T I C S



Basic Research



Validation



Translation

OF2i

real time

PROCESS ANALYTICAL TECHNOLOGY

The Problem

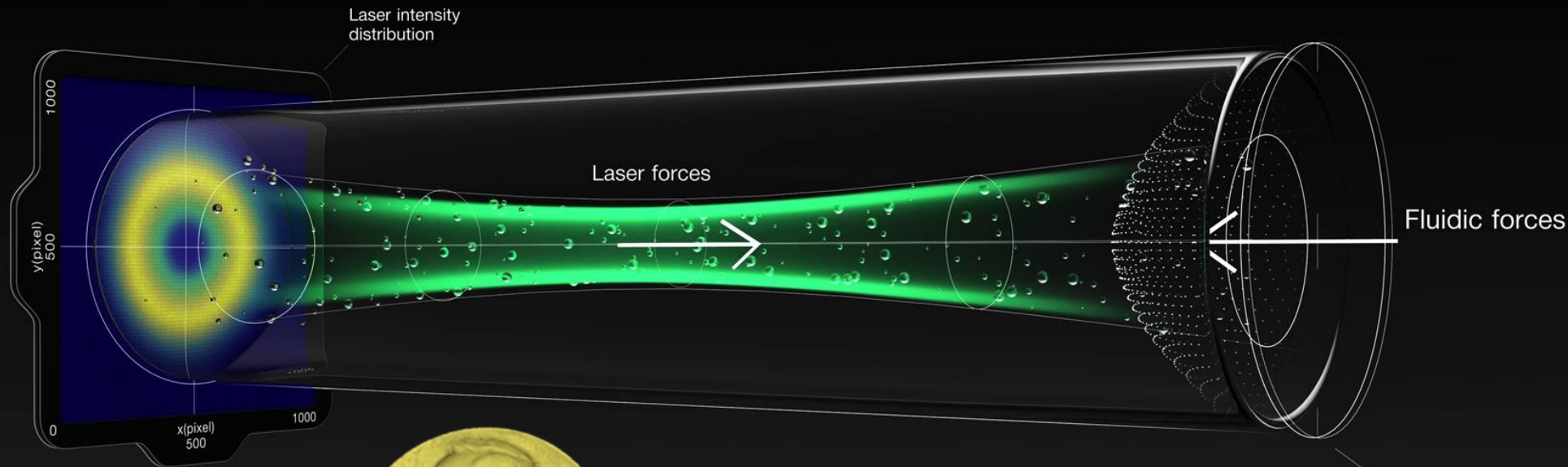
CONTINUOUS nanoPARTICLE PRODUCTION



TYPICAL PRODUCTS

- Emulsions
- Pharmaceuticals
- Dietary supplement & Nutraceuticals
- UV blockers
- Lubricants
- Coatings

Combining
Biophotonics & μ -Fluidics



Based on
NOBEL PRIZE 2018 PHYSICS
Ashkin et al.

...breaking the barrier of Brownian Motion



A BRAVE SOFTWARE H.A.N.S. 2.1

HAVE A CLOSER LOOK

The screenshot displays the OF2i software interface, which is divided into several functional areas:

- Service-Info Panel:** Shows the current service mode (START), status (Ok), and control buttons for STOP, Previous, and Next.
- Exposure and Gain Settings:** Includes sliders for Exposure (Auto, 1000.00) and Gain (Auto, 15.00).
- ImageSettings Panel:** Configures image parameters such as Width (1440), Height (200), PixelFormat (BGRB), and PixelSize (3).
- Control Panel:** Features a row of status indicators for Global, Laser, Valve, Pump, and Cam, each with a green indicator light.
- Video Feed:** A central window showing a sequence of 12 frames of particle images.
- Particle Size Distribution Graphs:**
 - Top Graph:** A semi-log plot of ParticleCount [%] vs. size. It compares Short Time Data (dashed line) and Long Time Data (solid line). Annotations show 1% for Short Time Data and 1% (+/- 9.47) for Long Time Data.
 - Bottom Graph:** A log-log plot of particle count [%] vs. size, highlighting peaks at 260nm, 310nm, and 510nm. It includes four data series for different processing steps.
- OF2i SPS D-Values* Table:**

	2HL	4HL
D90	24,3	15,5
D70	13,5	6,8
D50	7,5	4
- OF2i - Metadata:**
 - Laser 1000 mW (in flow)
 - Fluidik 6 µl/min
 - 2HL 1:50.000 Dilution
 - 4HL 1:90.000 Dilution
 - *D-Values %-Messbereich (~100nm - ~50µm)
- Correlation Graph:** A bar chart comparing correlation values for two samples: 2HL_13_41_44 and 4HL_13_48_59.



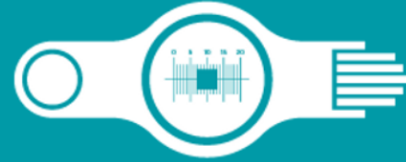
ACTIVE

INDUCED MOVEMENT AS A MEASURING PRINCIPLE



FAST & RELIABLE

MEASUREMENT DATA STREAM AS DOCUMENTATION



DETAILED & VISIBLE

SINGLE PARTICLE ACCURACY & LIVE VISUALIZATION



REPRESENTATIVE

STATISTICALLY VALID RESULTS



AUTOMATED & INTEGRABLE

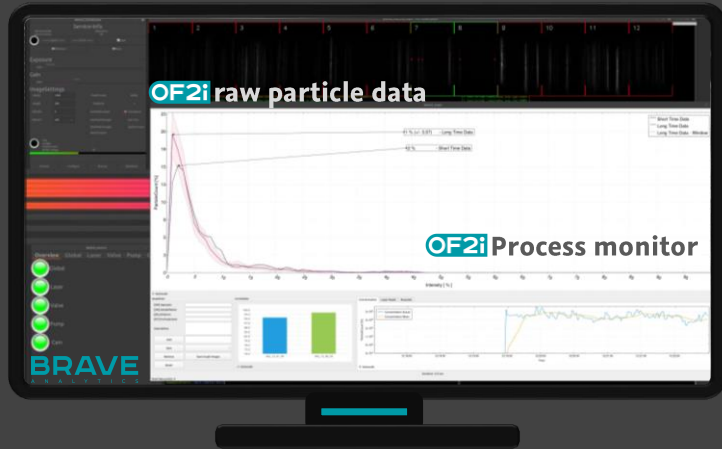
PROCESS ANALYTICAL TOOL (PAT SENSOR)



CONTINUOUS

MEASUREMENT DATA IN REALTIME 24/7

BRAVE in Action



AREAS OF APPLICATION

- Predictive Maintenance
- In Process Quality Control (IPQC)
- Monitoring of Critical Quality Attributes (CQA)
- Identification of Critical Process Parameters (CPP)
- Basic research

CONTINUOUS PRODUCTION



OF2i AUTOMATED PROCESS ANALYTICAL TECHNOLOGY (PAT)

**Industrial validation
within 3-4 production
plants until 2022**

**Industrial beta testing
H2020 Project: NanoPAT**



PHARMACEUTICAL & ORGANIC INDUSTRY

Active ingredient control for emulsions such as infusions, painkillers, vaccines, etc.



FOOD TECHNOLOGY

Ingredients and concentrations of (nano) particles in the production process

BEAUTY & COSMETICS INDUSTRY

Skin lotions, sunscreen, etc.

DENTAL CARE

Ceramics, surfaces, tissues etc.



COATINGS

Surface coatings, pigments and lacquers



ENVIRONMENTAL ANALYSIS

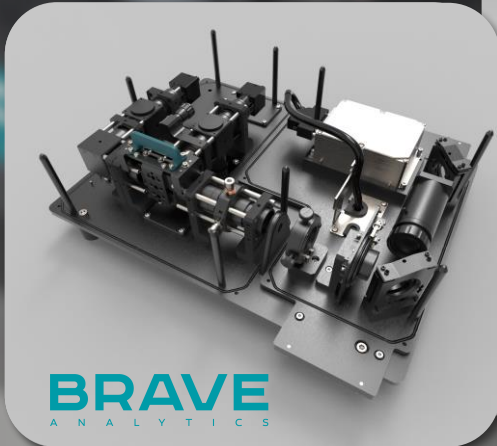
Particle sizes and distribution, for example from nanoplastics



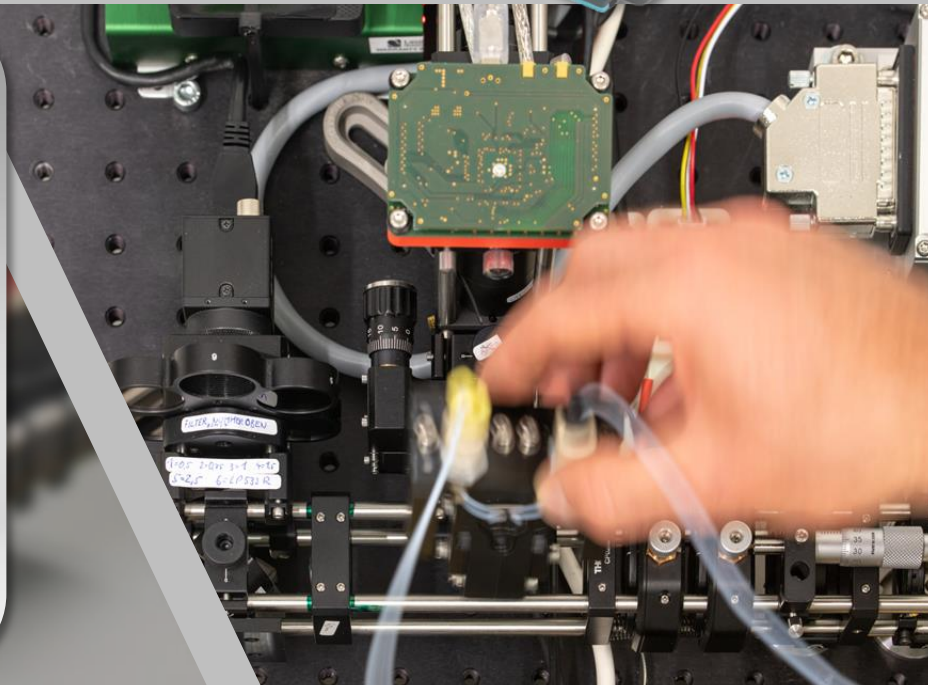
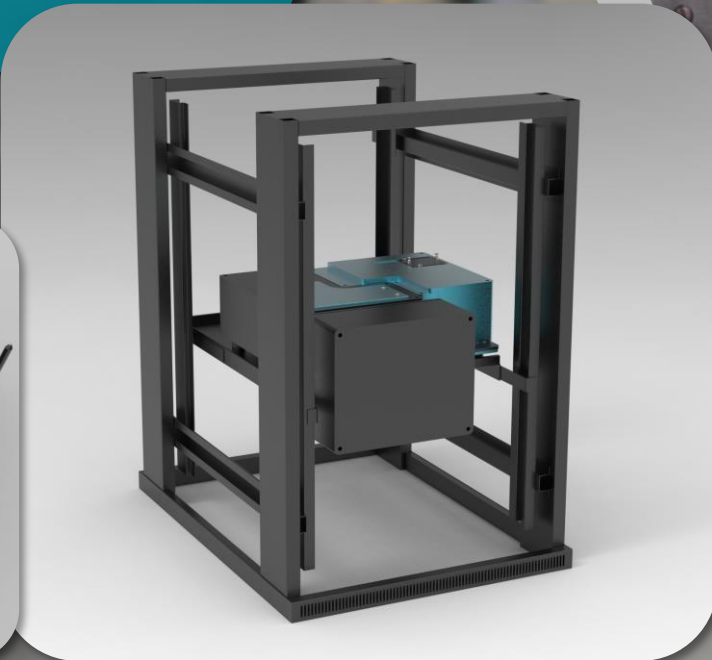
**PLANNED SALES LAUNCH
2022**



4 Pre-Series
Prototypes 2021



BRAVE
ANALYTICS



WE ARE
BRAVE

BRAVE Expertise
Particle Characterization PAT
Photonics
Fluidics

BRAVE Hardware
Real time ^{nano}Particle PAT Sensors
Automated Sample Dilution Systems

BRAVE Service
Particle Characterization & Fingerprint
Consulting & Engineering



BRAVE

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