

# DMT CoreScan<sup>®</sup>3

## high-tech core logging tool



DMT CoreScan3 - optical drill-core acquisition and storage unit (stand-alone)

DMT CoreScan3 is a portable core imaging device developed for drill core image acquisition, storage and evaluation of full and slabbed core.

Furthermore, whole core boxes can be scanned in one image.

Full core is rotated 360° around its cylindrical axis while the line-scan camera, positioned parallel to the axis of rotation, scans its surface. Full core is scanned at a rate of ~20 sec/m and the image can be stored as BMP, PNG, TIF or JPG files.

# Applications

- Digital drill core acquisition & storage
- Applicable on any core drilling project
- Online global accessibility of core images
- Digital drill core library
- Structural analysis and presentation
- Petrographical analysis: Mineral content, grain size distribution
- Derivation of geotechnical parameters (RQD, etc.)

# Services

- Selling and leasing of the CoreScan system
- Training on the CoreScan system
- Scanning of drill cores
- Re-orientation of the drill core log according to borehole inclination and deviation
- Structural and petrographical analysis of drill cores

# Modes & Dimensions

## 360° Full Core

- Length: up to 1 meter
- Diameter: 30 mm – 150 mm (1 ½ - 6 inch)
- Image size: 18 MB (1 meter, 100 mm diameter)
- Resolution: 5 – 40 pixel/mm = 127 – 1008 dpi)

## Slabbed core

- up to 1 meter
- up to 250 mm
- 15 MB
- 5 – 40 pixel/mm

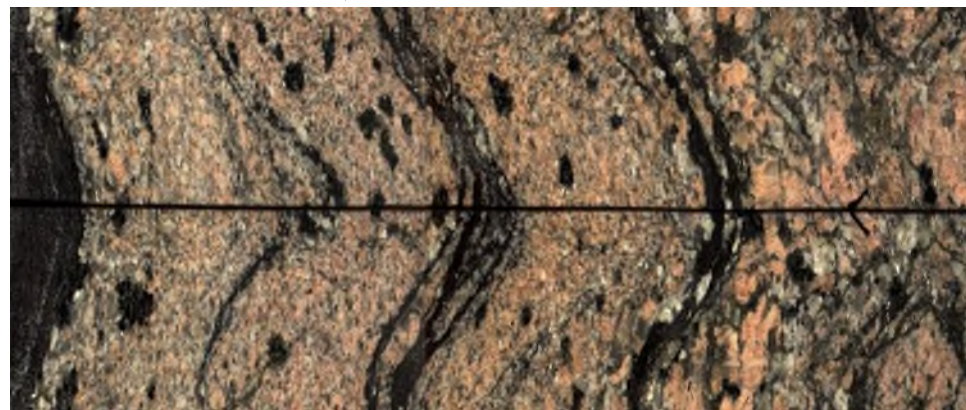
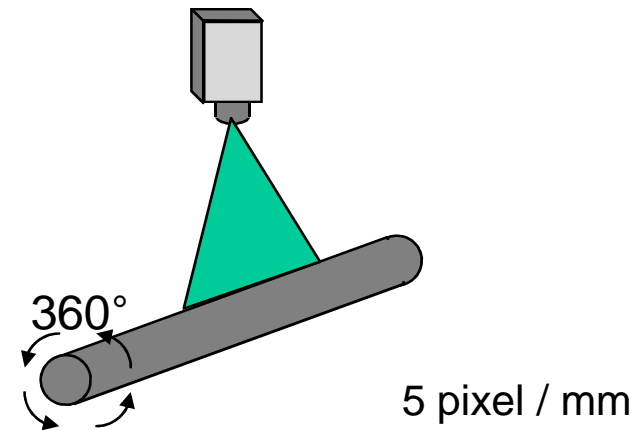
## Core Boxes

- Length: up to 1.05 meter
- Width: up to 0.64 meter
- Image size: 25 MB (1 x 0.6 meter)
- Resolution: 5 – 10 pixel/mm = 127 – 254 dpi)



# “360° Full Core Mode”

Scanning during rotation of the core



"unrolled" image of the core mantle

# “Plane Mode“

Scanning of slabbed core and core boxes



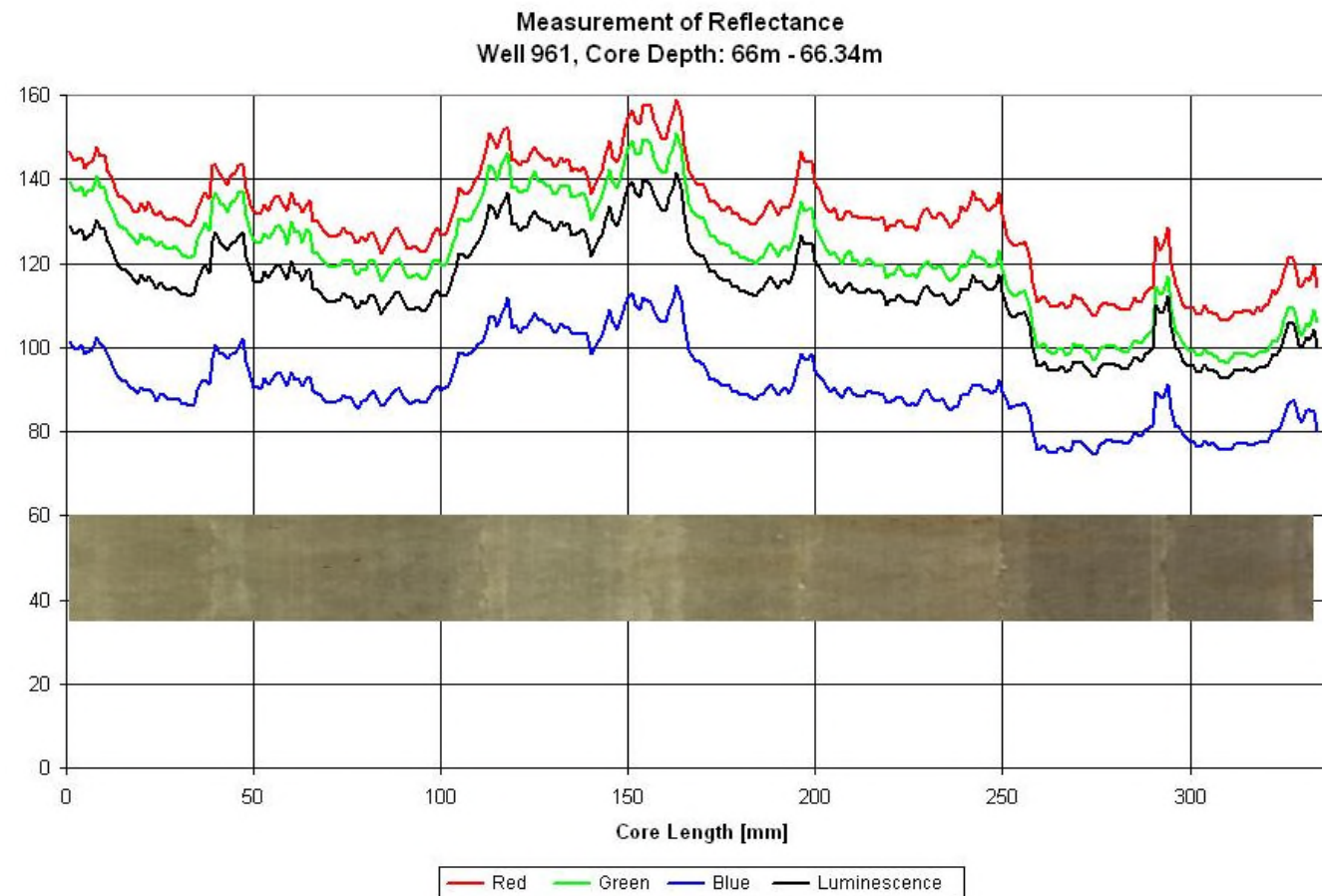
Resolution: 5 – 40 pixel/mm



Surface image of the slabbed core

# 3-Channel Spectral Data

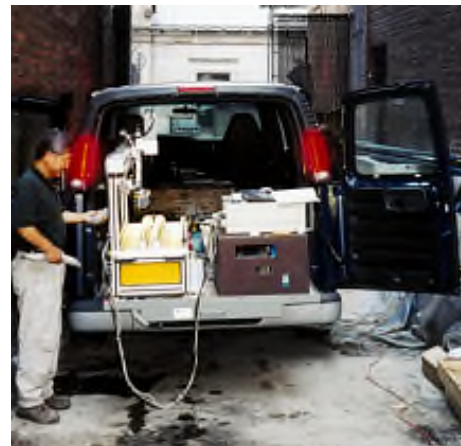
## Measuring of the Reflectance



# Field Operations



**Bushveld, De Borchsen, South Africa**



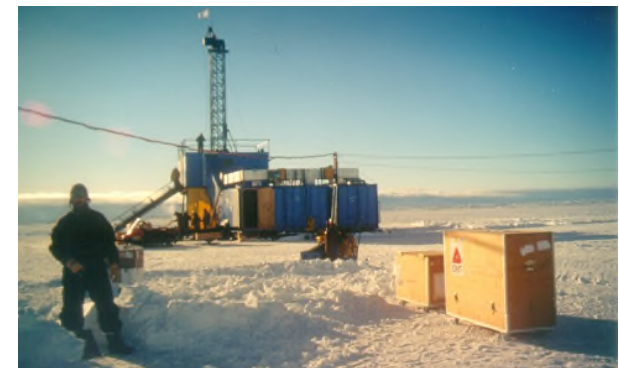
**Geotechnical application,  
New York City**



**Jwaneng Mine, Botswana**



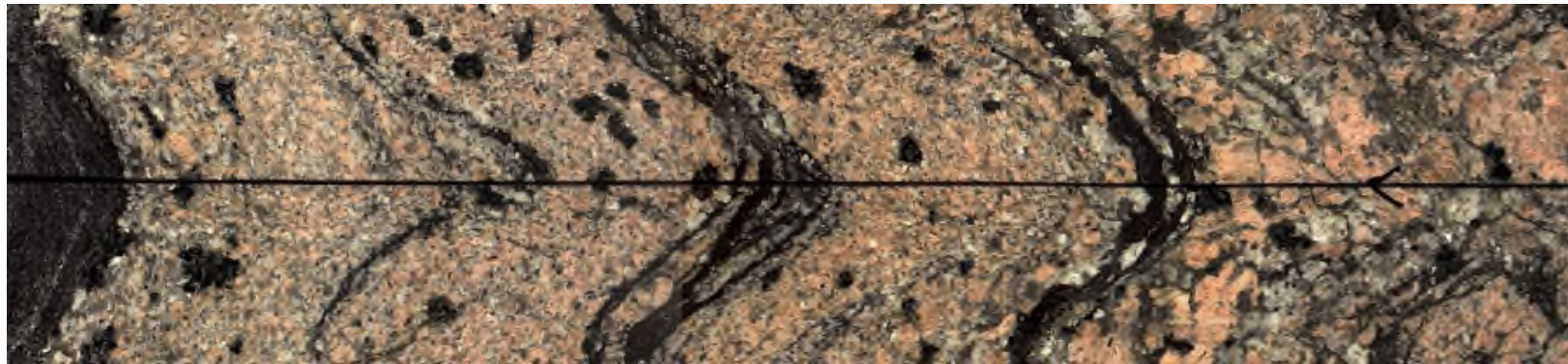
**Gold Mine in Sapporo, Japan**



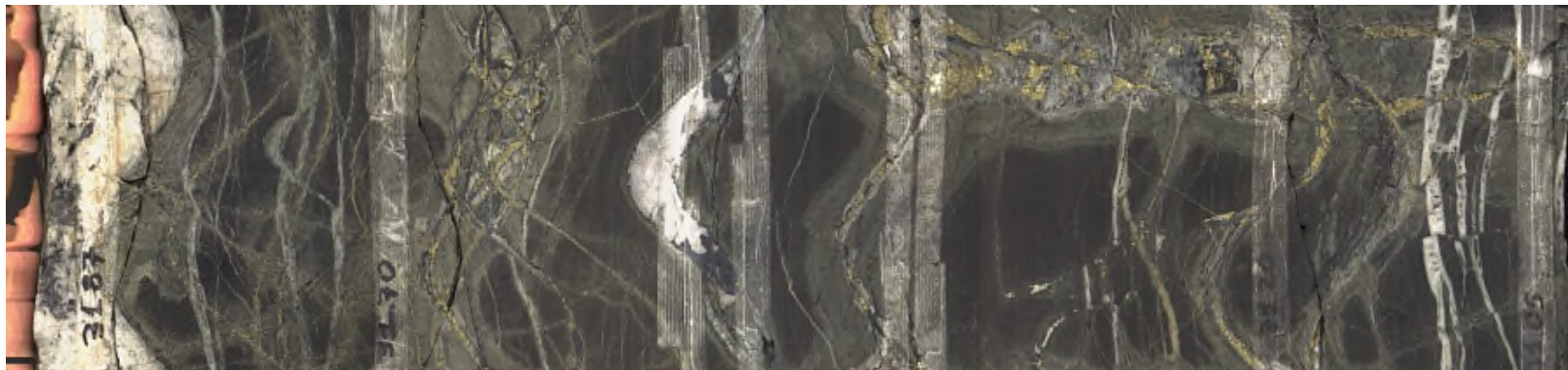
**Cape Roberts Drilling Project, Antarctica**

# CoreScan

## Examples



Finland



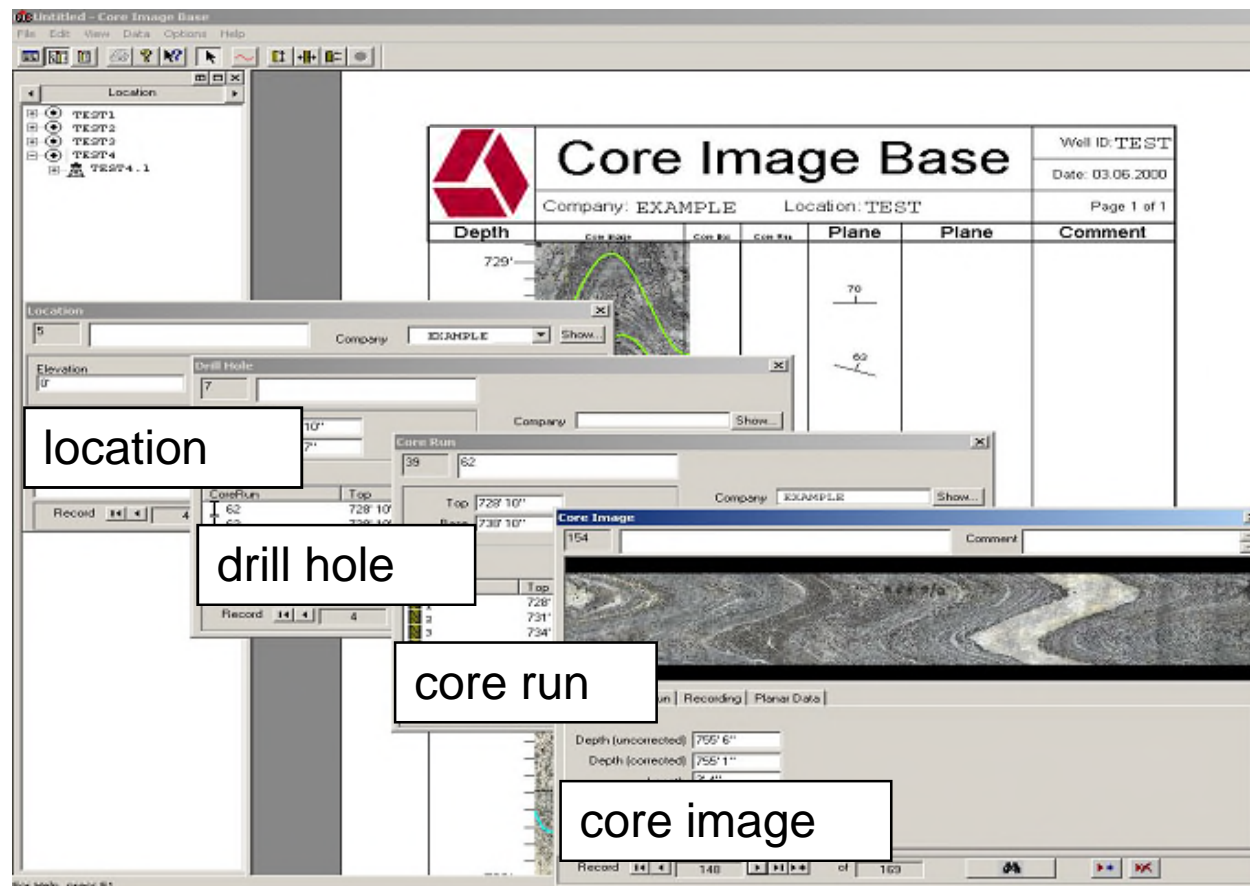
El-Teniente, Chile

# Evaluation Software

- CoreBase™2 (Digital Drill Core Library)
- CoreStructure Analysis™ (Quantitative Structural Analysis)
- CoreImage Analysis™ (Petrographic Analysis)

# CoreBase™

## Data Management System

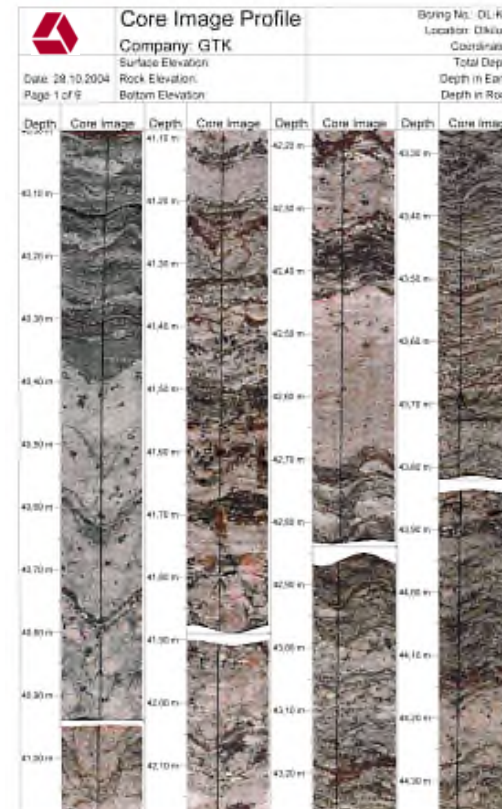


# CoreBase™2

## Digital Drill Core Library



Drill Core Storage House

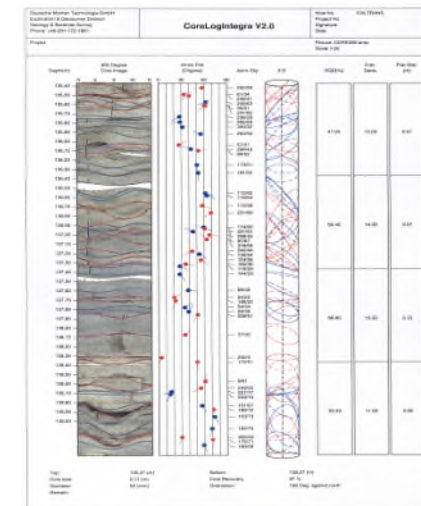


Virtual Drill Core Library

# CoreStructure Analysis™

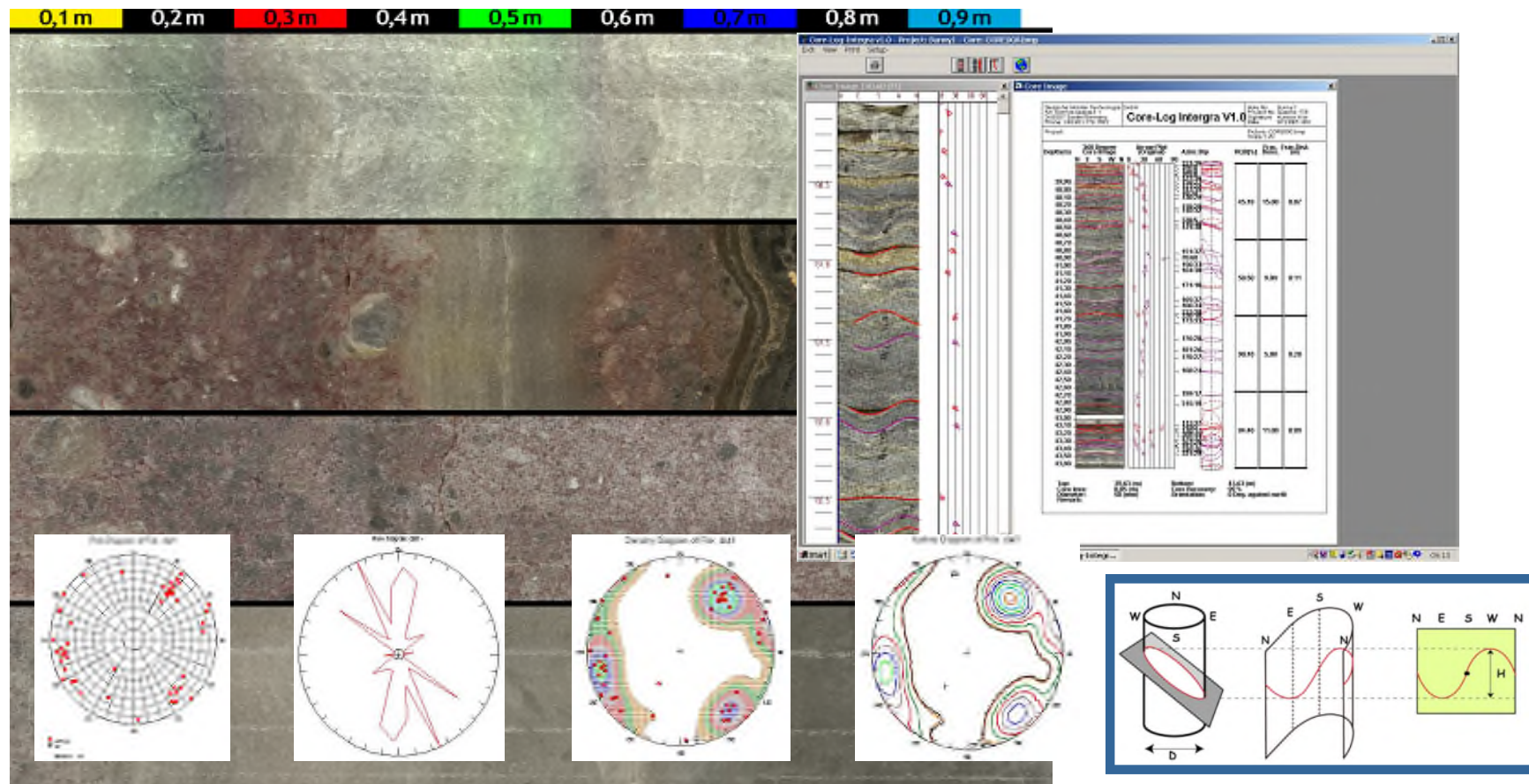
## Structural Analysis

- Software system for quantitative structural evaluation, analysis and presentation
- Geological structures are evaluated by pickup routines (bedding, foliation, joints, faults, veins, self-determined)
- Acquired structures can be N-oriented in connection with geophysical logs or oriented drill cores
- Geomechanical parameters: RQD, FD, FS
- The orientation of the borehole together with the structures are presented graphically and in the case of deviated boreholes, the dip direction and dip of the structures are corrected directly on request



# CoreStructure Analysis™

## Quantitative Statistics



# CoreImage Analysis™

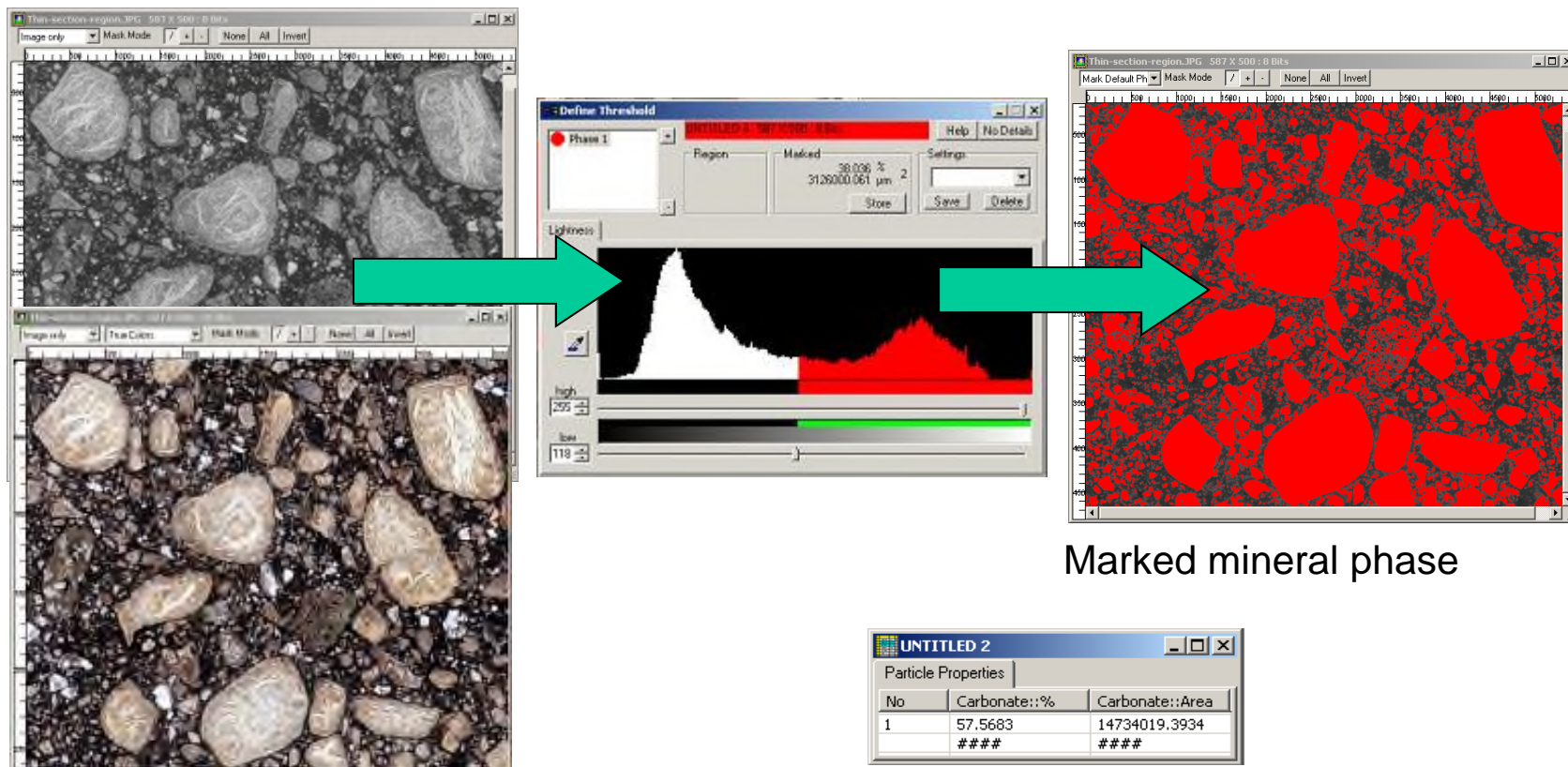
## Petrographical Analysis

**Main parameters can be evaluated with “CoreImage Analysis”:**

- differentiation of mineral phases
- mineral content (absolute and percentage)
- grain size distribution (sieve curve)
- grain sphericity (circularity, convexity, ellipticity, rectangularity)
- porosity (absolute and percentage)
- porosity size distribution

# CoreImage Analysis™

## 1. step: define threshold



The workflow consists of the following steps:

- Colour or grey:** The original image of mineral grains.
- Define Threshold:** A dialog box where a threshold is set. The histogram shows the distribution of pixel lightness values. The 'Marked' area is highlighted in red.
- Marked mineral phase:** The resulting image where the mineral grains are highlighted in red.
- Particle Properties:** A table showing the content of the mineral phase.

UNTITLED 2		
Particle Properties		
No	Carbonate::%	Carbonate::Area
1	57.5683	14734019.3934
	####	####

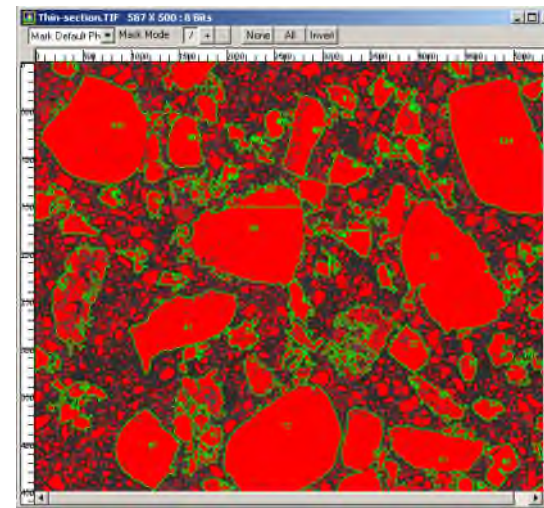
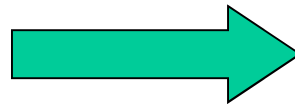
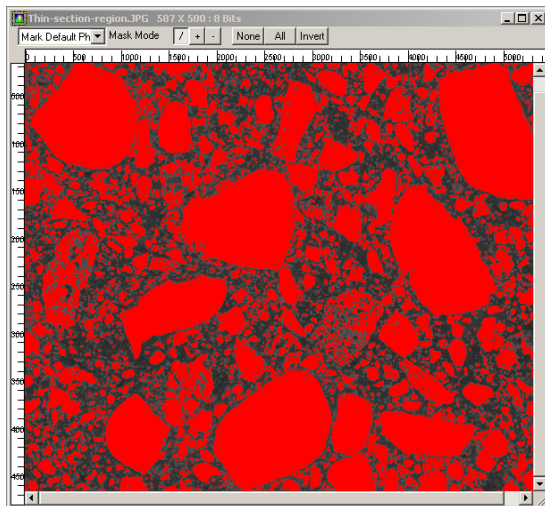
Colour or grey

Marked mineral phase

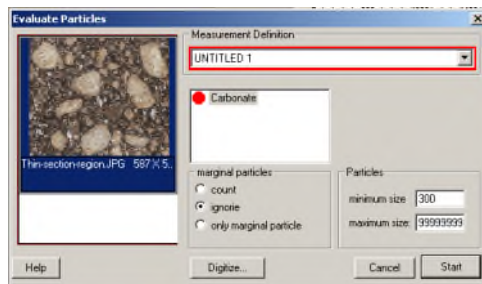
Content of mineral phase

# CoreImage Analysis™

## 2. step: automatic particle measurement



Marked grains of mineral phase



UNTITLED 1

No	Area	Circumference	Long Axis:Length	Long Axis:Phi	Short Axis:Len...	Short Axis:Phi	Coordinate:x	Coordinate:y
1	34838.8359	957.6394	302.4368	163	159.8166	90	1123.9362	64.8391
2	38124.1094	969.7492	348.3829	172	197.4589	75	1885.5796	198.8051
3	58511.8594	2665.1145	437.2834	169	322.3667	66	4578.2441	156.7017
4	38776.9053	2930.6987	862.8445	96	635.1393	45	1162.7010	587.8446
5	69063.3359	1144.8971	415.1149	70	268.8058	0	5360.5635	147.2850
6	39671.8711	1957.8987	489.6381	36	222.7258	119	1729.8447	478.5372
7	100893.2672	1752.2483	457.3344	71	355.7702	6	4989.2108	444.1151
8	448545.3750	5922.6982	1100.0283	131	879.0256	93	4213.2930	517.3387
9	46431.8242	1230.0920	330.5419	55	213.3794	126	1834.3561	712.3072
10	452494.0000	5841.9746	1181.3029	118	716.0626	20	3474.9832	438.7661
11	50321.6719	1037.3316	333.0723	175	221.8335	77	4731.8962	1020.6718
12	69814.3281	2405.9573	501.4812	115	281.4568	0	5347.6729	696.2078
13	229202.3125	6084.3706	943.0682	69	564.5439	164	1696.4583	1047.3076
14	69854.9766	2715.4622	507.3685	153	342.6215	75	387.2356	967.8517
15	116721.3047	2497.8301	705.1151	143	262.1410	57	4205.0942	1112.3857
16	55302.2813	1853.0436	577.4616	167	233.6025	84	477.6016	1212.7950
17	39678.1484	803.6420	292.7967	101	194.2110	175	4521.7930	1494.9537
18	31147.2926	1306.7960	402.2248	39	189.0823	136	1633.9667	1584.9531
19	36587.9805	1410.1262	340.2000	140	245.2684	65	96.8648	1524.9309
20	1186832.6250	8505.9688	1679.0106	113	1169.9402	168	2590.8669	696.6420

Content of mineral phase

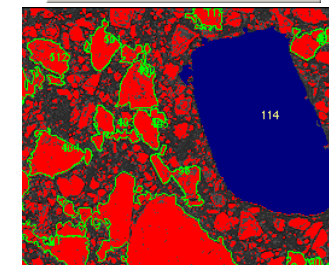
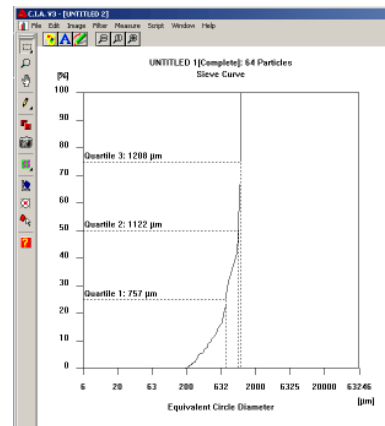
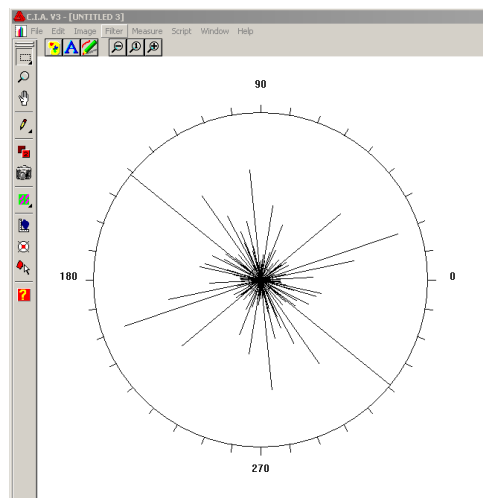
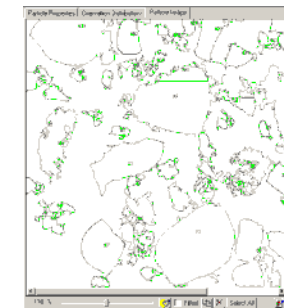
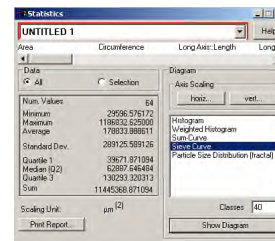
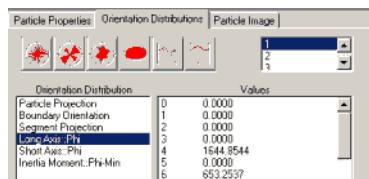
# CoreImage Analysis™

## 3. step: Evaluation (orientation, grain size distribution, mineral content)

Orientation distribution

Grain size distribution

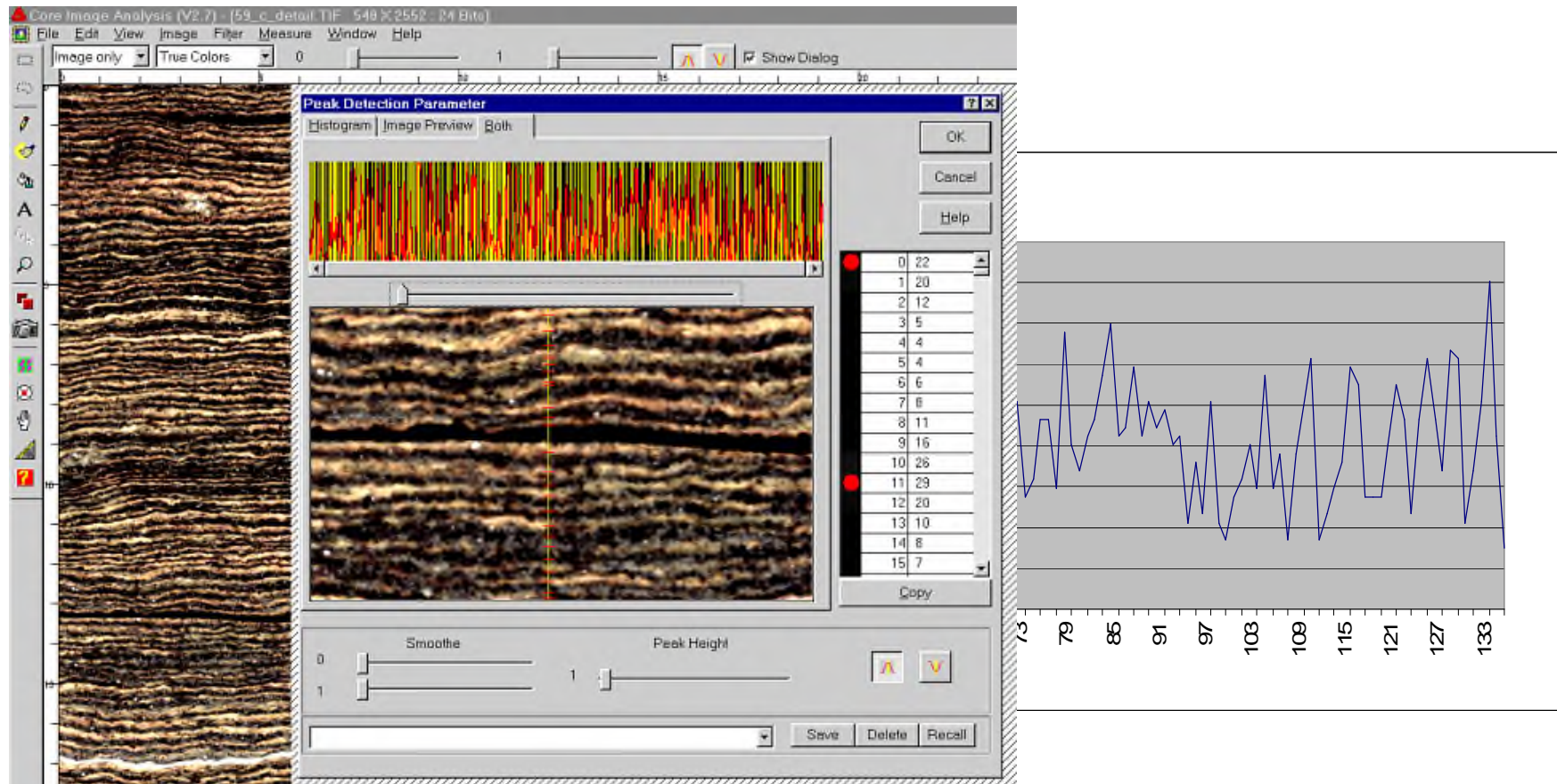
Mineral content, particle properties



No	Area	Circumference	Long Axis:Length	Long Axis:Phi	Sho
113	193472.3438	3969.0315	770.3867	120	580
114	1130760.8750	5483.4771	1634.3591	125	895
115	1015885.5000	7763.4844	1491.7180	12	111
116	35258.2148	788.2191	280.4144	166	166
117	32646.4473	1255.8271	303.1341	158	179
###	###	###	###	###	##

# CoreImage Analysis™

## Analysing varvites and laminae



# DMT CoreScan3

**For more Information please contact:**

**DMT GmbH  
Exploration & Geosurvey**

**Am Technologiepark 1  
45307 Essen, Germany**

**Phone:           +49 201 172 1970**  
**Fax:               +49 201 172 1971**  
**E-mail:           [info.corescan@dmtd.de](mailto:info.corescan@dmtd.de)**  
**Internet:        [www.dmt.de](http://www.dmt.de)**  
**[www.corescan.de](http://www.corescan.de)**