

AK Plasma

Fachausschuß Normung

Bericht Frühjahrssitzung 2010, Dresden

Dünnschichttechnik

- VDI
- DIN
- ISO
- VAMAS

Nanotechnologie

- VDI
- DIN
- ISO
- VAMAS

VDI-Richtlinie

VDI 2841 CVD-Diamant-Werkzeuge

Blatt 1: Systematik, Herstellung und Charakterisierung
(Weißdruck verabschiedet)

Blatt 2: Anwendung

(in Arbeit, Gründruck terminlich noch nicht abzusehen)

Weitere Blätter sind angedacht.

Deutscher Spiegelausschuss:

DIN NA 062 01 72 AA Chemische und elektrochemische Überzüge

Obmann: Dipl.-Ing. (FH) M. Sahre, BAM VI.4

Als Grundlage eines neuen NWIP dient die VDI-Richtlinie

VDI 2840 Kohlenstoffschichten -

Grundlagen, Schichttypen und Eigenschaften

(2005-11, VDI-Gesellschaft Produktionstechnik; Ausschuss CVD Diamantwerkzeuge)

(Federführung Dr. Gäbler, FhG IST Braunschweig).

„Wiederbelebung“ Spiegelausschuss im DIN geplant !

10. April 2010 fand in Berlin der vom Normenausschuss Materialprüfung im DIN (NMP) organisierte Workshop

"Chemische Oberflächenanalyse – Ist eine Vertretung deutscher Interessen in der Internationalen Normung wichtig ?,"

- Die Einberufung einer zeitnahen konstituierenden Sitzung wurde empfohlen.
- Dem Einladungsschreiben wurde eine hohe Bedeutung beigemessen



Neu: Chairman: Dr. Ian S. Gilmore, NPL, UK
Teilnehmer: G8 Staaten + EU, Erweiterung auf G20

Recent topics: XPS, AES und SIMS

Future topics of importance for TWA 2 include:

- 1. Spectroscopic ellipsometry**
- 2. Nanoparticles (important for both ISO TC 201 and TC 229)**
- 3. SPM (there is much need to draft standards in ISO TC 201\SC 9 to be validated in interlaboratory studies).**
- 4. Desorption electrospray ionisation (DESI).**
- 5. Tip enhanced Raman spectroscopy (TERS).**
- 6. MALDI (for bioanalysis).**
- 7. Multivariate analysis**

Project A11: Evaluation of data-processing algorithms for angle-resolved X-ray photoelectron spectroscopy

Project leaders: W. S. M. Werner, Vienna TU, and C. J. Powell, NIST

Project objectives: *An interlaboratory study is being conducted to determine uncertainties in results from ARXPS experiments. The main objectives of this project are to: (i) evaluate similarities and differences of film thicknesses and composition profiles obtained from analyses of simulated ARXPS data by different analysts using different algorithms for data analysis, and (ii) evaluate the effects of two assumptions (neglect of elastic scattering of the signal electrons and the finite analyzer acceptance angle) made in ARXPS data-analysis algorithms on derived film thicknesses and composition profiles.*

Bericht Aktueller Stand

DIN NA 062-08-17 Nanotechnologien

**(Spiegelung ISO/TC 229 Nanotechnologies +
CEN/TC 352 Nanotechnologies)**

ergänzt um Informationen aus dem DKE K 141
(Spiegelung IEC/TC 113 Nanotechnologies)

Organisation of "Nano" standardisation

international

OECD

BIAC

*Business and Industry Advisory
Committee
BDA & BDI*

IEC/TC 113

ISO/TC 229

CEN/TC 352

JWG1 Terminology & Nomenclature

JWG2 Measurement & characterization

**WG 3 Performance
Assessment**

**WG 3 Environment,
Health, Safety**

**WG 4 Materials
Specification**

*BAYER, BASF, Evonik,
Merck, Wacker, AUDI,
Daimler, Kronos,
ThyssenKrupp, Siemens,
VCI, VDMA, ...*

DKE K 141

DIN NA 062-08-17

Chair: Fabricius (FZ Karlsruhe)
Co-Chair: Bergholz (Jacobs University)

Chair: Reiners (BAM)
CoChair: Engel (BASF)

ISO/TC 229 :

33 P-Member, 8 O-Member

36 projects (4 IS, 26 TS, 6 TR)

- 1 published TS;
- 1 TS and 2 TRs approved and in final editing;

IEC/TC 113 :

15 O-Member, 15 P-Member

1 project + 6 joint projects with ISO/TC 229

CEN/TC 352 :

30 member states

4 projects as CEN ISO doc's (2 TS, 2 TR)

3 EN ISO doc's (full standards)

- **JWG 1 *Terminology and Nomenclature*** **9 Projekte**
(Convenor: Canada)
- **JWG 2 *Measurement & Characterisation*** **12 Projekte**
(Convenor : Japan)
- **WG 3 *Health, Safety & Environmental Aspects of Nanotechnologies*** **9 Projekte**
(Convenor : USA)
- **WG 4 *Material Specification*** **3 Projekte**
(**Convenor China**)

Σ : 33

JWG1

Terminology and Nomenclature

Wie kann man die Diskussionen zielführender gestalten ?

- Die fachlichen Diskussionen werden von Interessen überlagert, die durch Regulierung, Patentansprüche, etc. geleitet sind.
- Dies sowie das ISO-„Timing“ führen zu national und international **unabgestimmten, „anwendungs-orientierten“ , unterschiedlichen Begriffs-Definitionen.**

Negativ-Beispiel: unterschiedlichste Definitionen von „Nanomaterial“

- EU-Cosmetic Directive (in Kraft seit 2010)
- EU Food Directive (ab 2011)
- VCI-Positionspapier (2010)
- SCENIHR-Dokumente (seit 2007 ?)
- BMU-beauftragte Machbarkeitsstudie „Nano-Produktregister“
- ...
- **Positiv-Beispiele:**
 - Schweizer „Vorsorge-Raster“ (2010) , bezieht sich auf ISO-Definitionen

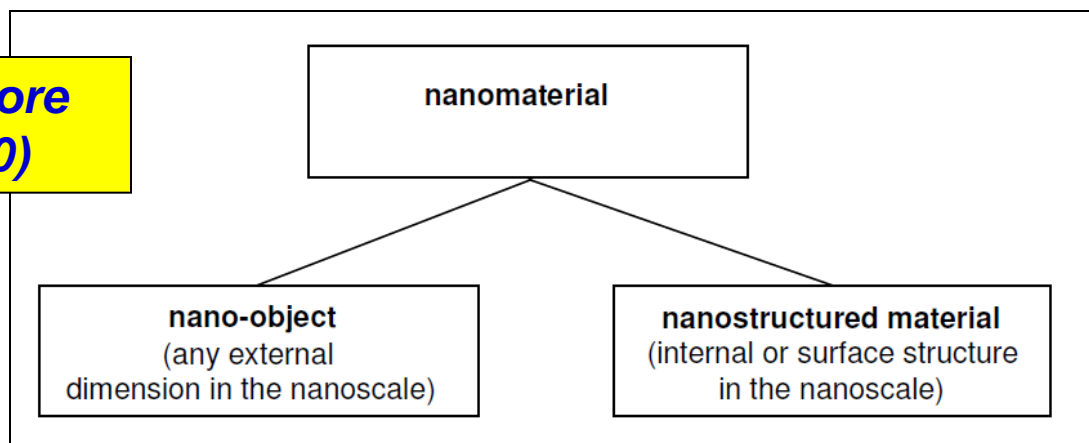
ISO/TS 80004-x Nanotechnologies — Vocabulary — Part x

- **Part 1: Core terms** (*Endabstimmung läuft*)
- **Part 2: Nano-objects — Nanoparticle, nanofibre and nanoplate**
ISO/TS 27687:2008 Nanotechnologies --- Terminology and definitions for nano-objects --- Nanoparticle, nanofibre and nanoplate will be revised as Part 2 of the ISO/TS 80004 series.
- **Part 3: Carbon nano-objects** (*Endabstimmung läuft*)

under preparation:

- **Part 4: Nanostructured materials**
- **Part 5: Bio/nano interface**
- **Part 6: Nanoscale measurement and instrumentation**
- **Part 7: Medical, health and personal care applications**
- **Part 8: Nanomanufacturing processes**
- **Neu: PG11 TR Nanotechnologies -- Framework for Nomenclature Models for Nano-objects**

ISO/DTS 80004-1 Core Terms (14.01.2010)



DIN CEN ISO TS 27687 : 2008

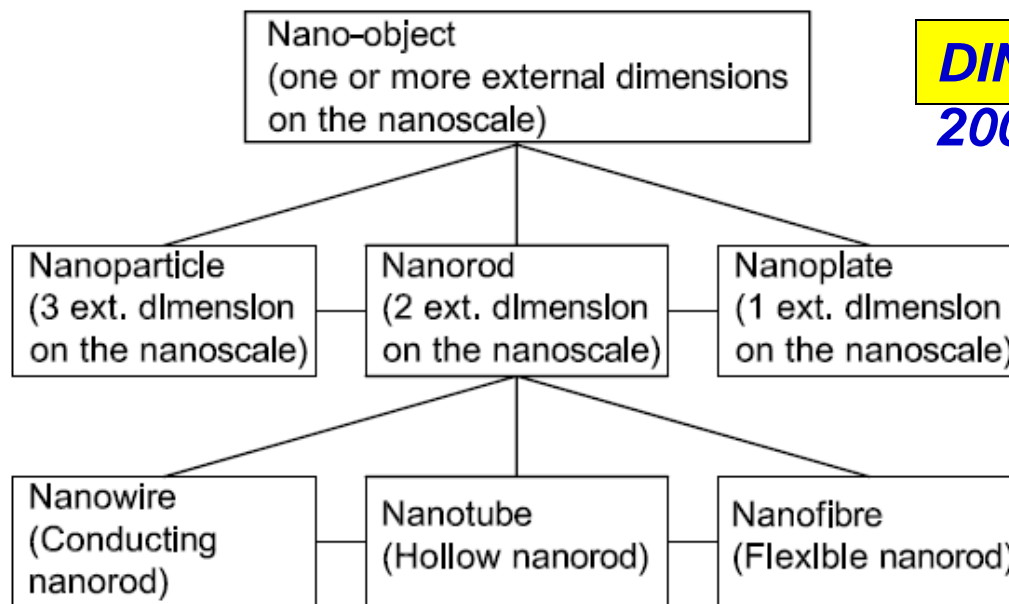


Figure 2 — Fragment of hierarchy of terms related to nanoparticles

14 Begriffe werden definiert:

- nanoscale
- nanotechnology
- nanoscience
- nanomaterial
- nano-object
- nanostructure

- nanostructured material
- manufactured nanomaterial
- engineered nanomaterial
- incidental nanomaterial

- nanomanufacturing
- nanomanufacturing process

- nanoscale phenomenon
- nanoscale property

Current Working Area/ Work Items

■ Carbon nanotubes and related structures

➤ Single wall CNTs

PG1: TEM, PG2: SEM/EDXA, PG3: UV-Vis-Nir Absorption,
PG4: NIR-Fluorescence, PG6: EGA-GCMS,
PG7: TGA, PG8: Raman

➤ Multi wall CNTs

PG5: Measurement methods, PG9: Shape factor,
PG12: ICP-MS

■ Engineered nanoparticles

PG10: Nanoparticle content

■ Basic metrology

PG11: Artificial grating

WG 3 Health, Safety & Environmental Aspects of Nanotechnologies

Standard Methods for

- **Controlling Occupational Exposures to Nanomaterials**
- **Determining Relative Toxicity/Hazard Potential of Nanomaterials**
- **Toxicological Screening of Nanomaterials**
- **Environmentally Sound Use of Nanomaterials**
- **ensuring Product Safety of nanomaterial products**

- PG2 Endotoxin test on nanomaterial samples for in vitro systems
- **PG3 Generation of nanoparticles for toxicological testing**
- PG4 Monitoring nanoparticles in inhalation exposure chambers
- **PG5 Guidance on physico-chemical characterization of engineered nano-objects for toxicologic assessment**
- PG6 Guide to safe handling and disposal of manufactured nanomaterials
- **PG 7 Nanomaterial Risk Evaluation Process**
- PG 8 Guidelines for occupational risk management applied to engineered nanomaterials based on a control banding approach
- **PG 9 Preparation of MSDS (Material Safety Data Sheet) for Nanomaterials**
- PG 10 Surface characterization of gold nanoparticles for nanomaterial specific toxicity screening: FT-IR method

- **ISO/TS 11931 Nano-calcium carbonate –**
Part 1: Characteristics and measurement methods
may be ready for a CD ballot in late 2010
Part 2: Specifications in selected application areas
has been paused, pending discussions with ISO/TC35, ISO/TC217 and ISO/TC206
- **ISO/TS 11937 Nano-titanium dioxide –**
Part 1: Characteristics and measurement methods
may be ready for a CD ballot in late 2010
Part 2: Specifications in selected application areas
has been paused, pending discussions with ISO/TC35, ISO/TC217 and ISO/TC206
- **ISO/TS 12805 Guidance on specifying nanomaterials**
will be ready for a CD ballot in mid 2010

ISO/TC 229 Task Group

N 655

Measurement and
characterization for EHS
issues relevant to
nanomaterials

Angela R. Hight Walker
USA/NIST

N 656

ISO/TC 229 TASK GROUP ON
CONSUMER AND SOCIETAL
DIMENSIONS OF
NANOTECHNOLOGIES

Report to TC Plenary Meeting
October 22, 2009
Tel Aviv, Israel

N 657

ISO TC 229
Task Group On Sustainability
Recommendations

Tel Aviv

October 18 - 23, 2009

IEC/TC 113

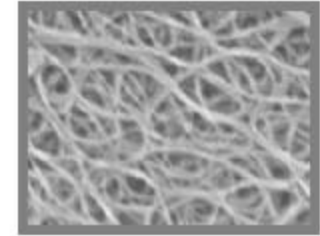
Nanotechnologies

- **JWG1 mit ISO/TC 229**
- **JWG2 mit ISO/TC 229**
- **WG 3: Performance assessment**
- **TG 1: IEC Nano-electronics Standards Roadmap**
- **TG 2: Nanoscale Electrical Contacts**

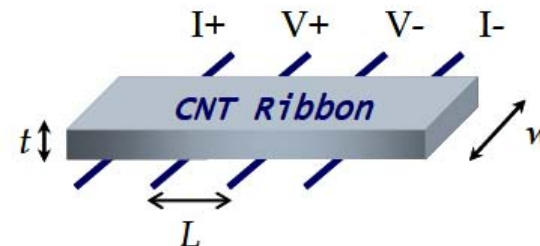
- 62565-01: Basic concepts
- IEC 62565-02
Guideline for **CNT specifications**
for **electrotechnical applications**

Agreed Title: IEC 62565: Guideline for carbon nanotubes specifications for electrotechnical appl.

Suggested Title: 62565-02: Nanomanufacturing- Blanc detail specification - SWCNT for electrotechnical applications



- IEC/ISO 62607:
Nanomanufacturing –
Key control characteristics
for **CNT applications – Resistivity**



- IEC/TS 62622 **Artificial gratings** used in nanotechnology:
Description & measurement of dimensional quality parameters
- **IEC 62624 IEEE** Standard test methods for measurement of
electrical properties of CNT's (published 2009)
- ISO/IEC TS 113-54 Determination of metal impurities in CNT's using ICP-MS
- IEC 62xxx-03: Nanomaterials characterization and use in large scale electronics manufacturing (IEEE 1784)
- IEC 62xxx-04: Methods for the characterization of CNT used as additives in bulk materials (IEEE 1690)

Pictures from: N. Fabricius, German-China Bi-lateral Forum on Frontier of Nanotechnology and Nanostandardization, September 2009, Lanzhou

Items with a CEN lead

- **CEN ISO/TR 11808** *“Guide to nanoparticle measurement methods and their limitations”* – draft due from Convenor for approval by Project Group and thereafter for vote on publication.
- **CEN ISO/TR 11811** *“Guide to methods for nanotribology measurements”* – revised draft circulated by Convenor to the Project Group for approval, and due thereafter for vote on publication.
- **CEN ISO/TS 13830** *“Guide to labelling of manufactured nanoparticles and products containing manufactured nanoparticles”* – draft due for circulation to the Project Group by the Convenor.

Mandate addressed to CEN, CENELEC + ETSI for Standardization Activities regarding Nanotechnologies and Nanomaterials

in cooperation with

- **ISO/TC 229**
- **OECD**



EUROPEAN COMMISSION
ENTERPRISE AND INDUSTRY DIRECTORATE-GENERAL

MANDATE ADDRESSED TO CEN, CENELEC AND ETSI FOR
STANDARDIZATION ACTIVITIES REGARDING NANOTECHNOLOGIES
AND NANOMATERIALS

Characterisation and exposure assessment of nanomaterials

1. Methodologies for nanomaterial characterization in the manufactured form and before toxicity and eco-toxicity testing
2. Sampling and measurement of workplace, consumer and environment exposure to nanomaterials
3. Methods to simulate exposures to nanomaterials

Vielen Dank für Ihre Aufmerksamkeit



Quelle: www.begann.de/