

CURRICULUM VITÆ

Name: **Dinko Chakarov (551109-0655)**
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Summary: Dinko Chakarov is an *experimental physicist* within the broad and interdisciplinary area of Surface Science. The major scientific interests are towards the interaction of simple adsorbates with well-characterized surfaces under UHV condition; in particular examination of the fundamental energy and charge transfer between substrate and the adsorbed layer as result of adsorption and during electron, ion and photon irradiation. His current activity is directed towards experimental evaluation of the mechanisms of optical excitations in nanoparticle- and nanocavity arrays and the related physical and chemical processes at their interfaces. Physics and chemistry of ice and carbon materials are of special interest. His scientific contributions include the discoveries of: new nanofabrication method based on plasmonic excitations of nanoparticles supported by waveguiding membrane (Nature Photonics 2008); alkali atoms photodesorption from surfaces, (later used to explain the origin of Moon's alkali atmosphere); Photostimulated crystallization of water ice at interfaces (applied in the models of comet brightness) and investigation of surface photoreactions (with W. Ho), especially these involving water and its photodissociation related to H₂ formation; Development of methods for surface patterning and modification (examples are laser treated dental implants and polymer surfaces with superhydrophobic properties (Lotus effect). Additionally to his teaching and supervision commitments, he is engaged in scientific leadership and administrative coordination of several national and international projects; Chairman of the Lise Meitner Award committee.

A: Personal and professional preparation:

Military service: 2 years (1973-1975 calculating ballistic missile effectiveness)

Undergraduate: University: Sofia University, Bulgaria, Area: Engineering Physics; Degree: MSc of Physics (physics engineer), MSc Thesis: "Gamma-Acoustic Resonance in a Thin SnO₂ Layer". Year: 1980 (awarded best thesis work SU-80).

Graduate: Research engineer at Metallurgy Industries Kremikovci (1980-1983) Graduate student Bulgarian Academy of Sciences, IGIC, Sofia. Area: Surface Science - PhD Thesis: "Interaction of CO, H₂ and CH₄ with Iridium Surfaces Studied by Electron Spectroscopy Methods". Time period 1983-1989, Degree: PhD.

Post-doc University(ies)/Department(s):

1. Lab. Atomic Solid State Physics, Cornell U., USA, Prof. Wilson Ho, Area: Surface Science, Time period: 1989 – 1991.

2. Surface Science Group, Chalmers/GU, Sweden, Prof. Bengt Kasemo, Area: Surface Science, Time period: 1991 – 1993.

B. Appointments:

Present: **Professor** of Physics, Dep. of Applied Physics, Chalmers;

2005: **Associate Professor** (*Docent*), Dep. of Applied Physics, Chalmers;

1995: **Lecturer**, Department of Applied Physics, Chalmers/Göteborg University;

1993: **Researcher**, Department of Physics, Chalmers/Göteborg University.

C: Tutoring experience:

Main supervisor of 7 PhD, 11 Licenciante, 12 PostDocs and 30(+) Master, Bachelor and high school students. Co-supervisor of 8 PhD and 4 Licenciante students.

Teaching experience and qualifications:

Teaching on graduate and undergraduate levels. Received training in Pedagogical (GU 1995), PhD Supervision (GU 2004, Chalmers 2010) and Scientific Leadership (Chalmers 2006/7) courses.

Developed, presented and examiner for the courses:

“Lasers in Material Science”(1997-2001), “Physics Applications”(1998-2002), “Chemical Physics” (2002 - 2008), “Solid State Physics” (2008 – 2011), “Nanotech for Sustainable Energy” (2011-); Contributing to the courses: “Surface Processes”, “Biomaterials”.

Invited Teacher and organizer of summer schools: “Laser micromachining”, Switzerland 2000, “Surface Photochemistry”, 2002 Germany, “Hydrogen”, 2006, 2010, Island, “Solar Fuels”- 2013.

Popular lectures at e.g. at schools, industries, festivals, interviews...

D: Networks and research grants:

* **PI** for the EU TMR network “Surface Photochemistry” (1998 – 2002, ~6 MSEK);

* **PI** for the LOTUS project within SSF’s program "High Performance Outdoor Insulation, (ELIS)” (2002-2005, ca. 4 MSEK);

* **Deputy program leader and program coordinator** of the SSF program: Multifunctional photoactive nanoparticles(PHOTO/NANO, 2003–09), ~24 MSEK);

* **Project leader and program coordinator** “Solar Hydrogen” N-INNER, 2008–2011) total ~1.6 M€;

* **PI** in the SSF’s program “Metamaterials” (2009-2012), total volume ~14 MSEK

* **PI** in the EU TMR network “LASSIE” (Laboratory Astronomical Surface Science in Europe) (2010 – 2014), ~4 MSEK (of total ~6.1 M€);

* **Project leader and program coordinator** “Nordic Initiative for Solar Fuels Development (N-I-S-F-D), (2012-2016), total amount ~20 MSEK

* + Number of smaller projects (grants from VR, VINNOVA, Preem, MISTRA, etc.)

Active international collaborations with: U. Oslo, DTU, Copenhagen, U. Iceland, U. California, Irvine, Heriot-Watt U., Edinburgh, Ulm U. and Essen U., EPFL, The Open University, UK (external PhD supervisor).

E: Entrepreneurial achievements: Innovations, etc.: Patent 0104452-8-2002 Metod för framställning av nanostrukturer, Forskarpatent i Väst AB, D. Chakarov, P. Hyldgaard, and B. Lundqvist. Patent US20040500384 – 2004-12-14, “NanoIC”, D. Chakarov, P. Hyldgaard, and B. Lundqvist (part of Chalmers strategic portfolio).

F: Other merits of relevance:

Deigned and constructed number (>5) of advanced experimental equipments of the scale > 2 MSEK.

Lab. responsible and deputy group leader for Chemical Physics group.

Editorial boards: (*World Journal Condensed Matter Physics, The Open Surface Science Journal; Chemical Physics; Photon Energy*),

Member of National and international advisory and examination committees, professional organizations etc.

Referee for: Surface Sci., Phys. Rev., JCP, Vacuum; EC’s “**Expert-Evaluator**”(DOE-USA) and EU’s FPs 5-7); **Guest Editor:** *International Journal of Photon Energy*.

Member (from its establishment 2008) of the Nanotechnology Committee (SIS/TK 516), Swedish Institute of Standards (SIS).

Member (2011-12) and chairmen (2013-) of the Lise Maitner Award Committee.

Deputy Chairman of the Faculty Assembly of the Department for Applied Physics (2014 - -)

BIBLIOMETRIC DATA:

(https://scholar.google.se/scholar?q=Chakarov+D*&btnG=&hl=en&as_sdt=0%2C5)

>130 Original papers and Invited talks; >1500 citations, h-index = 21