

Georgi Ivanov Ginev

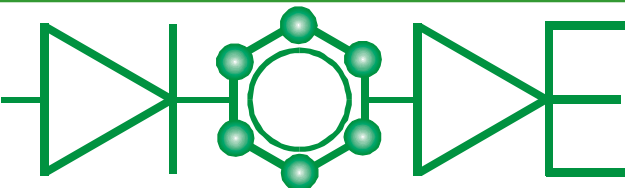
Technical University - Braunschweig

Institute for High-frequency Technique

Supervisor - Prof. Dr. W. Kowalsky



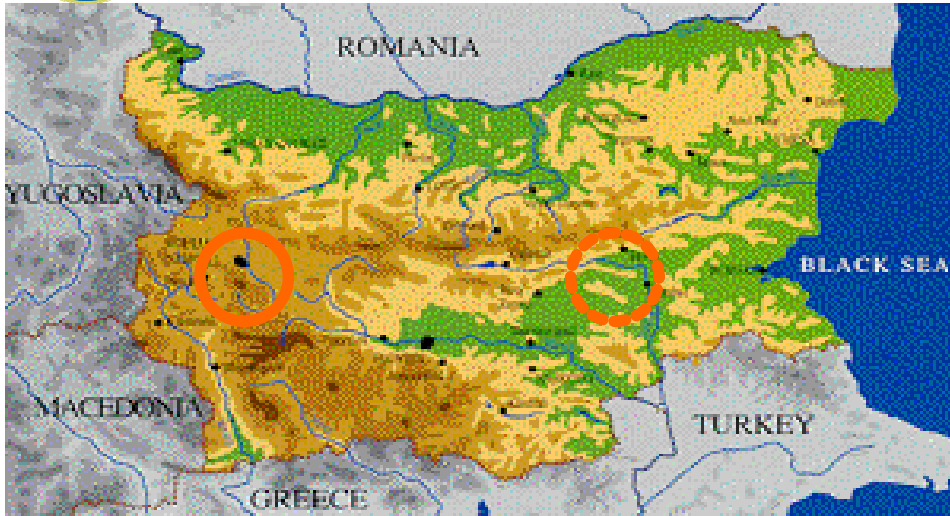
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Education



Personal data

Date of birth: 01.10.1971

Place of birth: Yambol

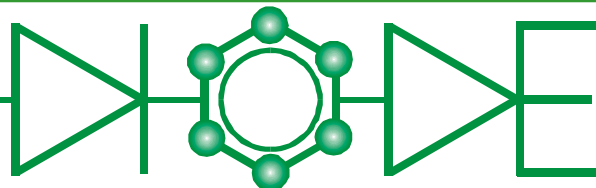
Secondary school: Physics

High education: 1989 -1996
Faculty of Physics, Sofia University

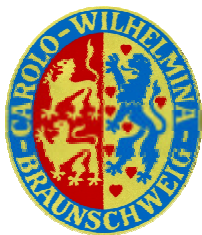
MSc Thesis:
Calibration of Kodak® LR-115/II Cellulose
Films for Registration of Alpha-particles



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Postgraduate experience

BULGARIAN

ACADEMY

OF SCIENCES



INSTITUTE OF MACROMOLECULAR CHEMISTRY
ACADEMY OF SCIENCES OF THE CZECH REPUBLIC

Institute of Polymers: 1996 -1997

Military service: 1997 - 1998

**Institute of Physical Chemistry:
1998 - 2001**

COPERNICUS project:
Thermal Properties of Polymers
Experimental Methods:
DSC, Photo-acoustic

**Institute of Macromolecular Chemistry
- Prague, Czech Republic:**
UNESCO founded postgraduate courses

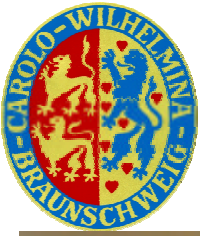
Experimental Methods:
DSC, OM, SEM, AFM, X-ray



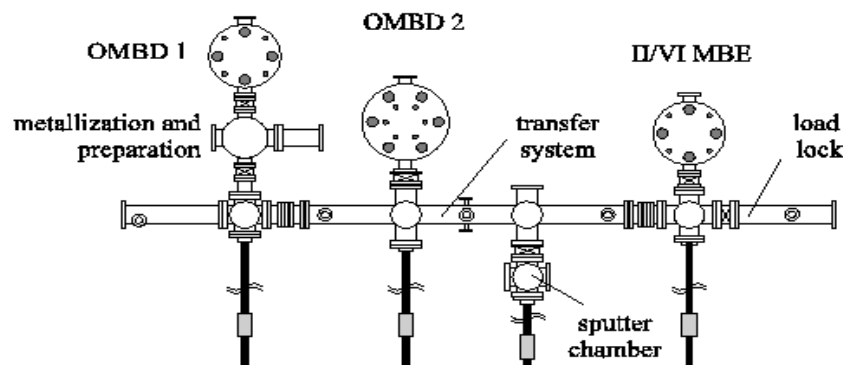
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Participating to DIODE



Join the DIODE project: 01.12.2001
Perfect working and social environment

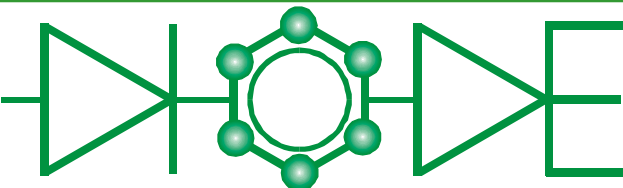
Technology/experimental techniques:
Photolithography, Organic Molecular
Beam Deposition (**OMBD**), Molecular
Beam Epitaxy (**MBE**)

Ultraviolet Photoelectron Spectroscopy
(**UPS**), Atomic Force Microscopy (**AFM**),
Profile-meter, **IV**, **CV**

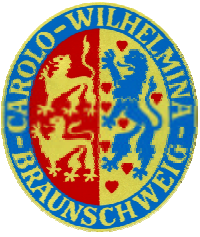
Participation to the regular weekly group
meetings and the institute seminars
Helpful discussions and technical
assistance from the other members



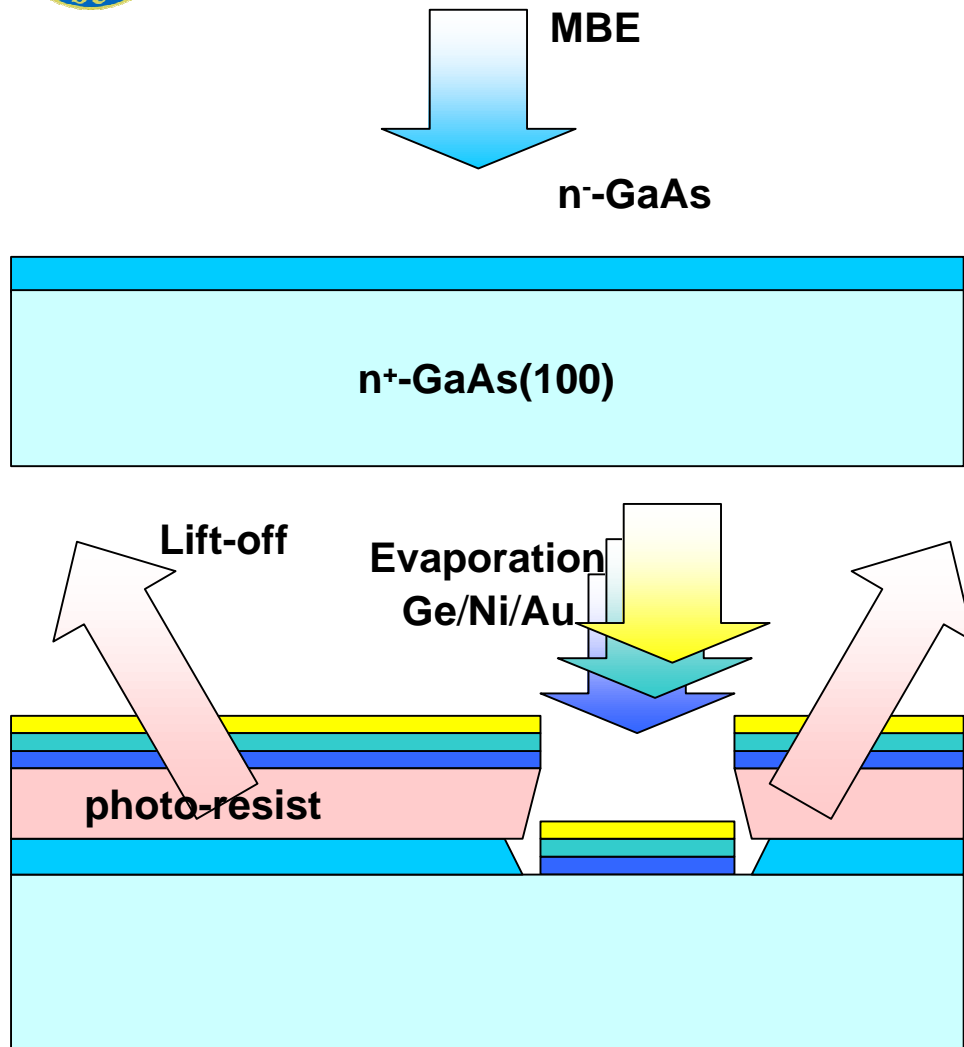
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Technology - I



Pre-cleaning

MBE - $n^+-\text{GaAs}$ (1000nm , $N_d=7 \cdot 10^{22}\text{m}^{-3}$)
on top of the $n^+-\text{GaAs}$ ($N_d=2 \cdot 10^{24}\text{m}^{-3}$)
substrate

Cleaning 10min in 35% HCl

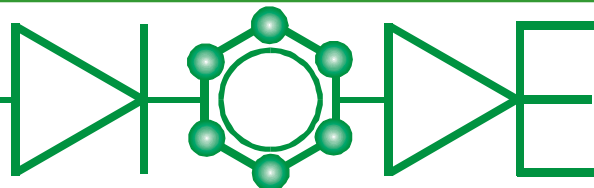
Negative Photolithography

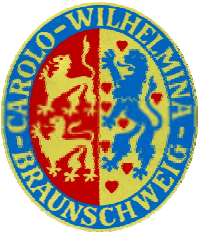
Wet chemical etching 45 sec in
1HBr:1Cr₂O₇(conc.):1CH₃COOH:6H₂O

Evaporation

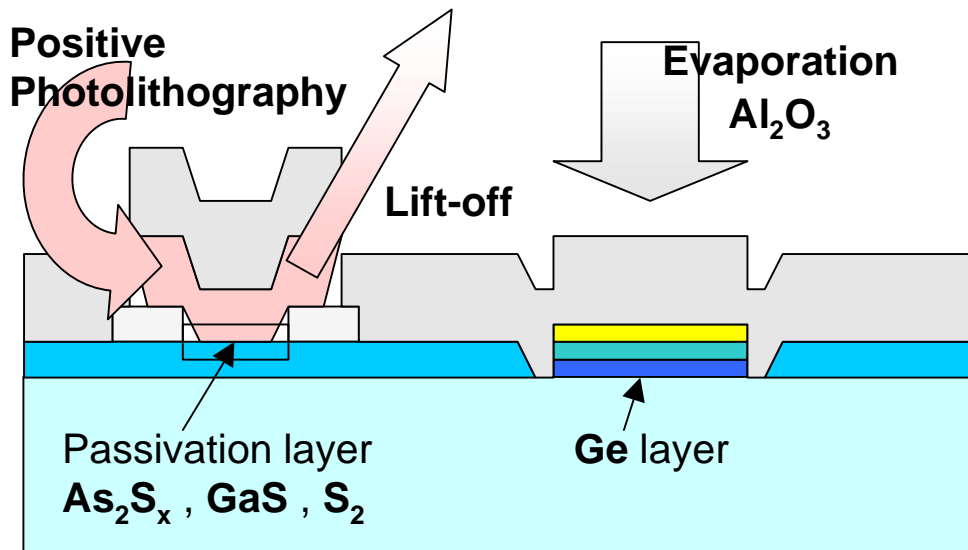
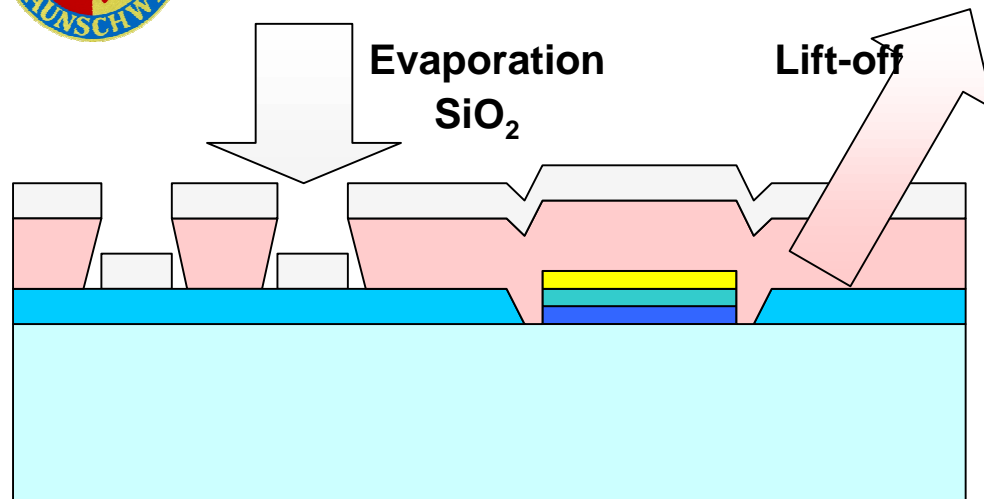
- **Ge**(20nm)/**Ni**(20nm)/**Au**(160nm) layers

Lift-off in acetone, ultrasonic bath





Technology - II



Negative Photolithography

Evaporation - $\text{SiO}_2(200\text{nm})$

Lift-off in acetone, ultrasonic bath

Positive Photolithography

Evaporation - $\text{Al}_2\text{O}_3(600\text{nm})$

Lift-off - in Acetone, ultrasonic bath

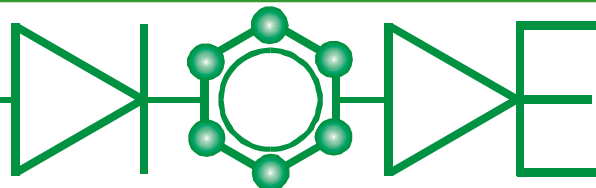
S - passivation in $1\text{S}_2\text{Cl}_2:3\text{CCl}_4$

Annealing at 450°C in the **OMBD**

- removing of As_2S_x
- partial melting of the **Ge** layer



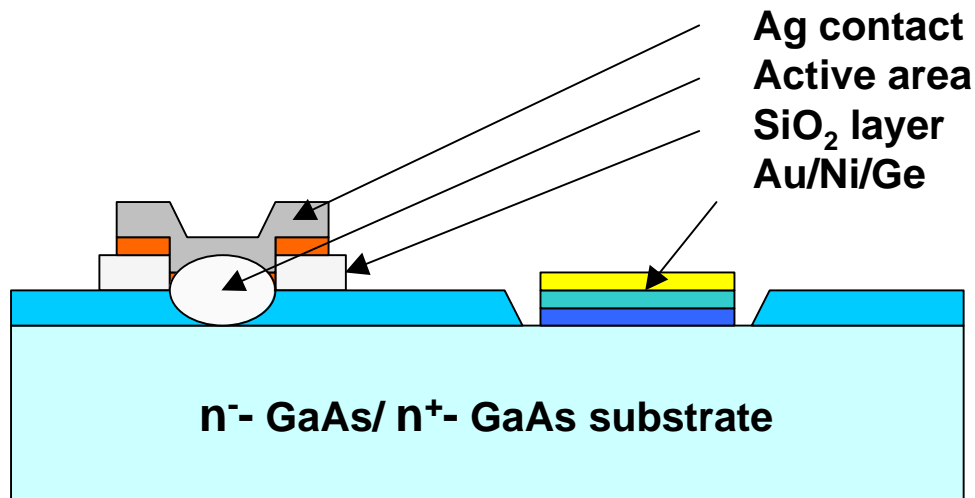
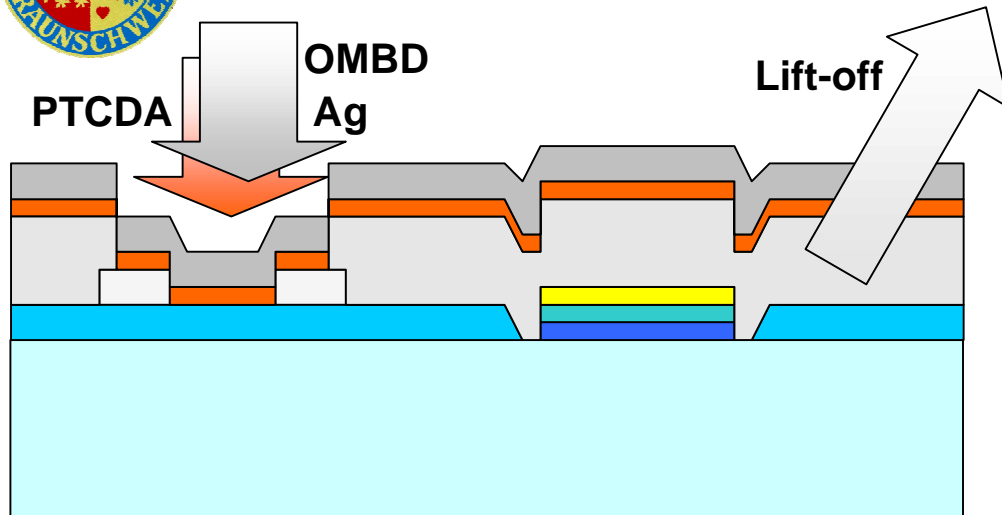
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Technology - III



OMBD

- PTCDA (5 - 20 nm)

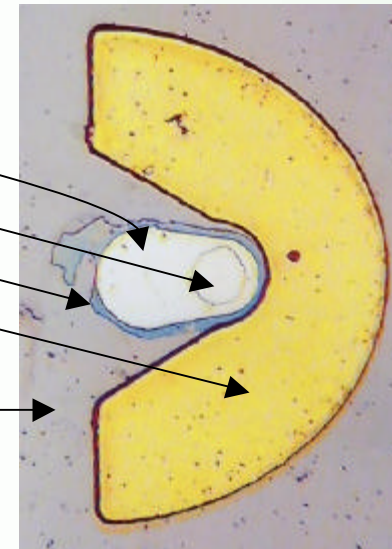
- Ag (200nm)

Lift-off in 20%NaOH

Forward Voltage: ~ 0.3 V

Breakdown Voltage: ~ -2.5 V

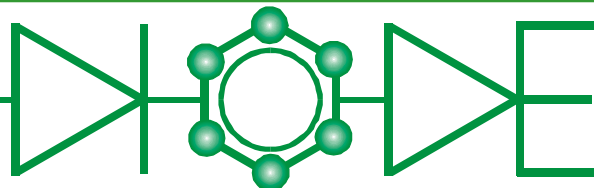
Ideality factor: < 1.8



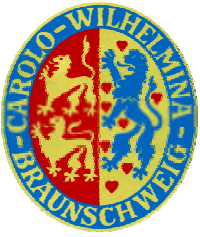
100 μ m



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Conclusion

Experience

- positive experience within the DIODE network
- work in interesting and perspective field
- experienced team

Compliments

- hosting institute
- whole organization of the project

