Optimizing performance of solar cells and modules based on heterojunction with intrinsic thin layer (HIT) technology

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Outlook

- Characterization Izovac Technologies Company;
- Motivation of our research;
- Wear-resistant Anti-Fingerprint (AF) films for solar cells;
- Implementation Plan and perspectives.

IZOVAC

A group of private engineering companies.

Head office, R&D and design department in Minsk.

Production in Minsk and Taiwan.

Very strong relationship with scientific community in Belarus, Germany, Taiwan, etc.

Specialization:

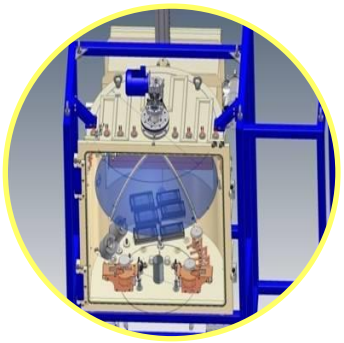
Development and industrial application of advanced technologies for thin-film and nano-structures preparation

Production of equipment for the formation of thin film structure in:

- Photovoltaic
- Displays production
- Optics
- Electronics

Core Competencies

Thin-film
Technology
R&D Centre



Design Department

Equipment
Production

The Experience of Successful
International Projects

www.izovac.com

Examples of the Batch Type PVD Coaters (more than 20 different models)

Ortus 700

Ortus 900

Ortus 1100

Ortus 1500

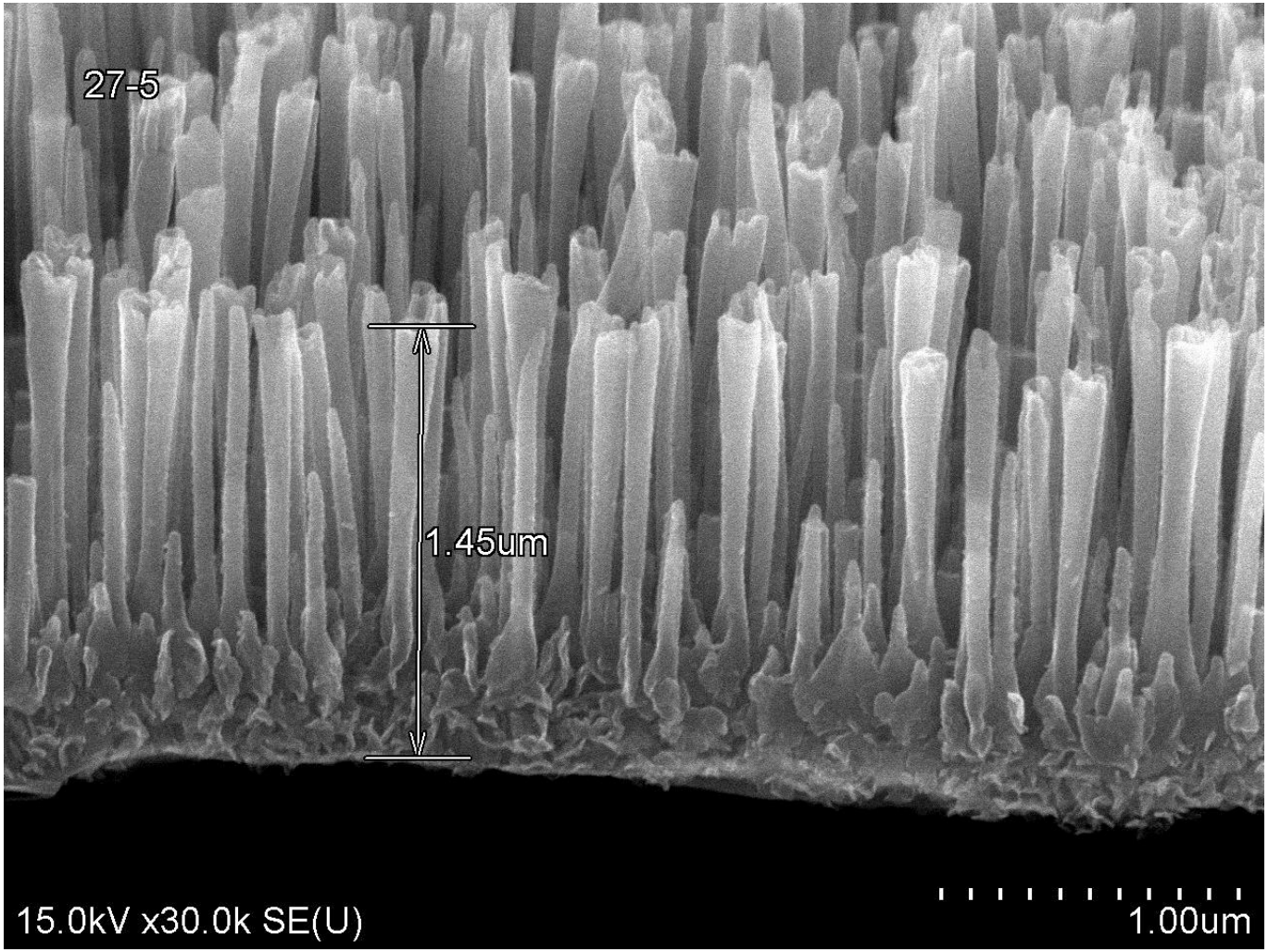
Aspira 150

Aspira 200

Diamanta

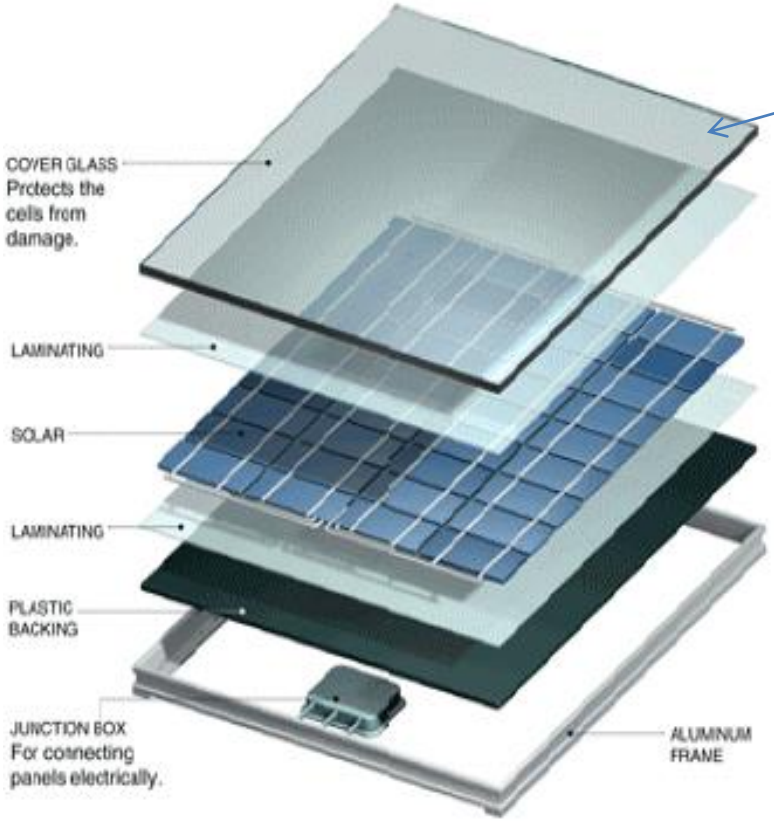
www.izovac.com

Example of R@D products: Forrest of ordered carbon nanotubes



Location of improving element for solar cell modulus

Our goal is to check the idea of improving of performance of solar cell module by applying wear-resistant, anti-smuggle, transparent coating onto the cover glass of module. There is no such a solution on a market yet.



Scratch-resistant "easy-clean" layer to prevent surface contamination

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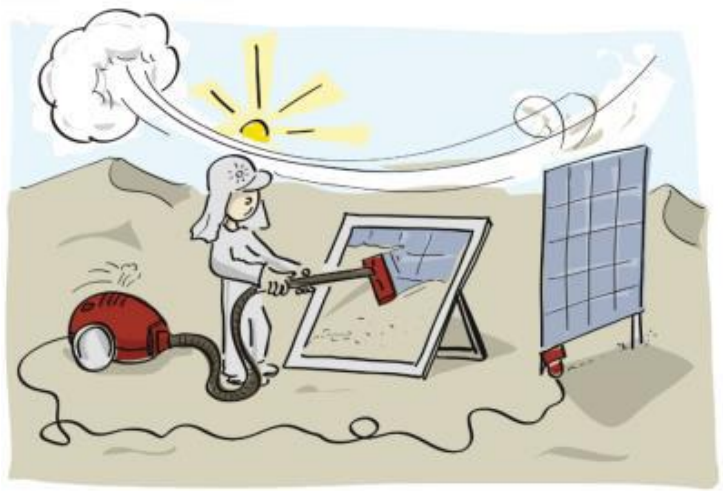
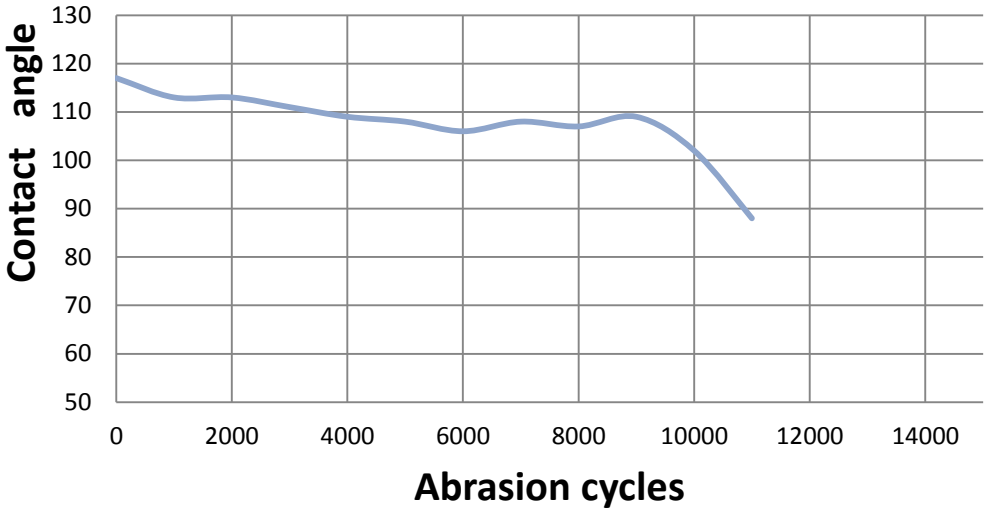
Our technology for formation of the wear-resistant easy-clean layer





GT-coating Technology Features:

- Up to 80% reduction in material used
- High Yield (up to 98% or even more)
- Non-clogging, low maintenance
- Highly uniform nanolayer films
- Superior deposition control with the ability to manipulate coating characteristics
- GREEN TECHNOLOGY

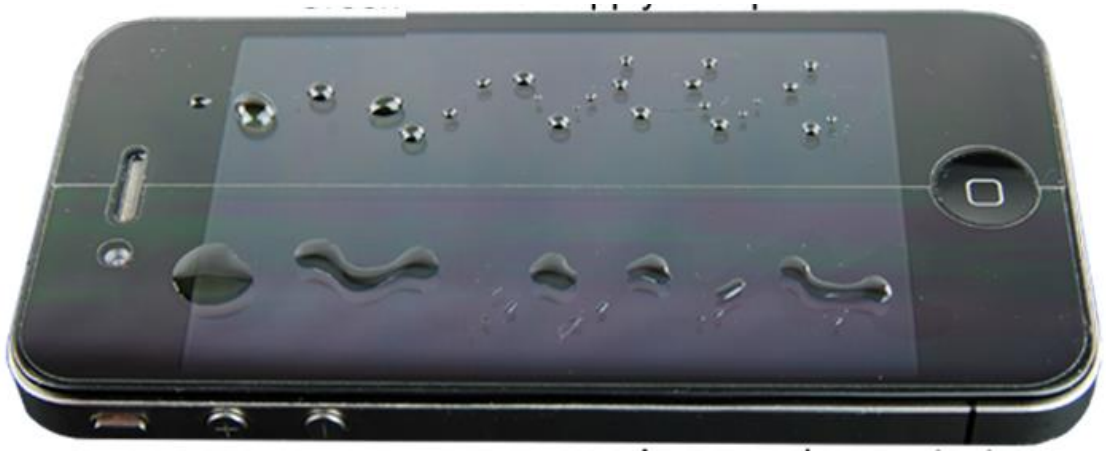
Protective covering Defensiz™ for optics

The thickness of DefensIz™ coating is about 6-8 nm.

Load: 1000 g per 1 cm^2
and abrasion by stainless steel wool

AntiFingerprint (AF) coverings by GT

Scratch Resistance
A special coating that protects from everyday wear and tear.
Water- and oil repellent: CA for water 115 degree and ~ 70 degree for fat (hexadecane)
Anti-Bacterial
Prevents bacteria and antimicrobial activity rate 99%
Anti –Fingerprint
Protects from leaving fingerprints, and other residues.

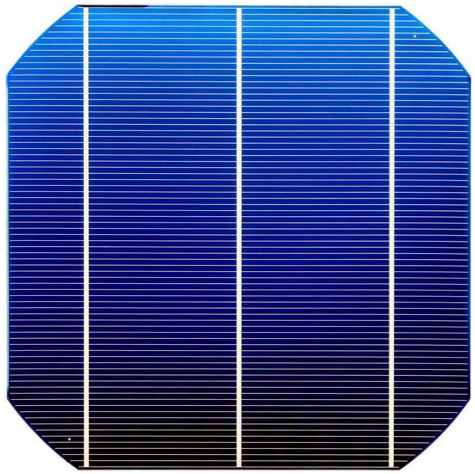


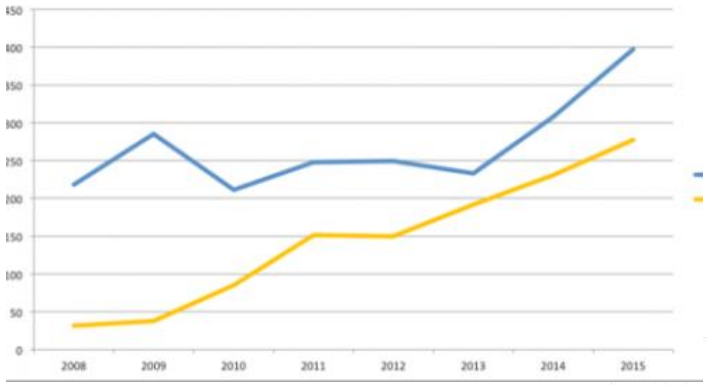
Implementation plan

1. Synthesis of organosilicon reagents based on perfluoropolyethers.
2. Construct small device for recording of the electricity that generated by HIT solar cell with dimensions 156x156 mm^2 and to write software for data collection;
3. Glass modification by antireflective wear-resistant coating, providing transparency, durability, hydro- and oleophobic properties of the cover glass;
4. Mount a set of solar cells on the roof of Izovac building and register production of electricity for 3 month period. It will be compared: (a) cell with ordinary glass; (b) with modified glass; (c) with protected glass that wipe 2 times per a week.
5. Conduct climate testing at Next Energy EWE Research Centre for Energy Technology, discuss the results and the details of spin-off company organization.

Schedule

	Task	The period of implementation
1.	Purchase of the reagents and synthesis of the organosilicon surfactants	60 days (1-2 month)
2-3.	Design of the device with both embedded solar cell and modified cover glass as well as software to record the energy generated by HIT Solar Cell	30 days (1 month)
4.	Recording information by the device	At least 90 days
5.	Analysis of the information and visit to Next Energy, Germany (climate testing)	14 days within last month





Thanks for your attention!