



Paton Electric Welding Institute  
National Academy of Sciences of Ukraine

# Falchenko Iurii

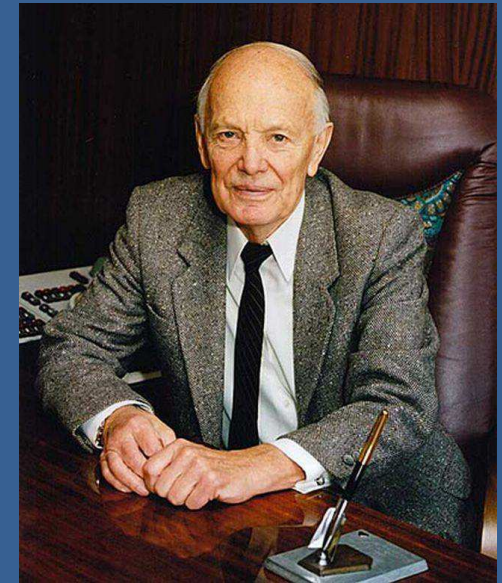
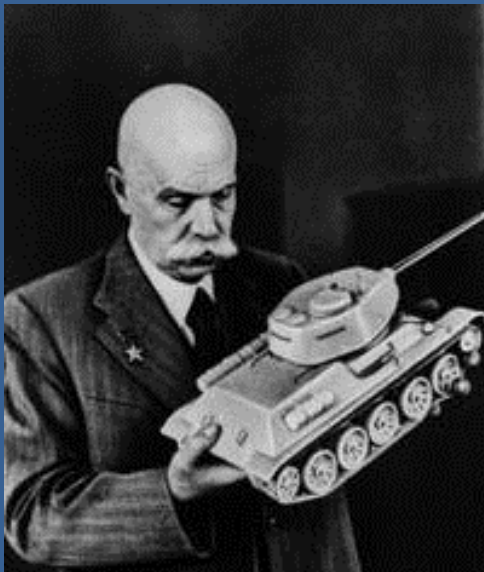
Dr. of Science (Eng.)

Chief of department of  
«Physical-metallurgical processes  
of welding for light metals and alloys»



# Paton Electric Welding Institute National Academy of Sciences of Ukraine

Our Institute was founded in 1934 by Evgeny O. Paton  
This year the institute will celebrate 80 years anniversary



Current director of the Institute and President of the National Academy of Sciences of Ukraine is Boris Paton

EWI includes 49 research departments, employs about 1500 staff among them:  
199 Doctors of sciences (professors), about 1024 candidates (Ph.D.).



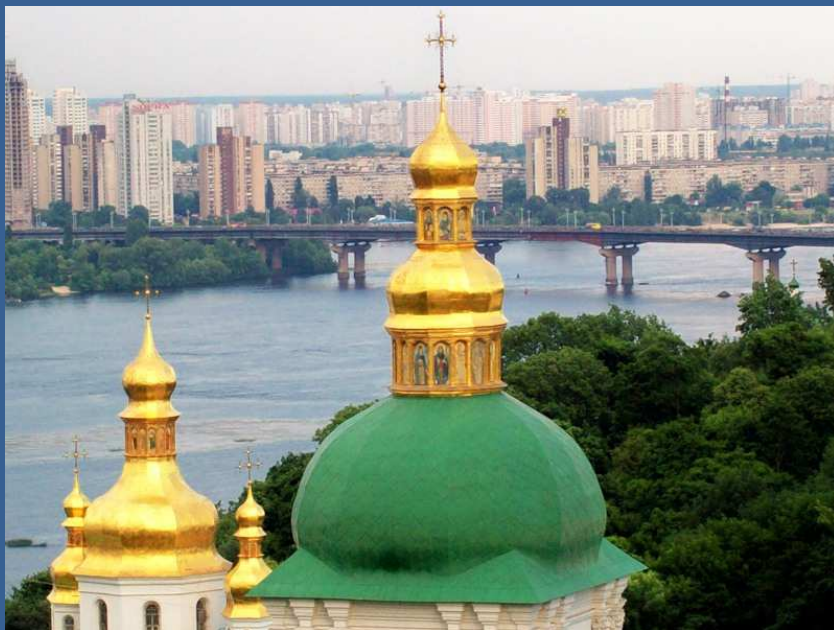
# Paton Electric Welding Institute National Academy of Sciences of Ukraine



The institute is located in the center of Kiev.

Kiev was founded more than 1500 years ago.

Today it's a modern and developed industrial city!





## Paton Electric Welding Institute National Academy of Sciences of Ukraine

The Institute's activities is based on the combination of fundamental research and applied engineering solutions.

### The main activities of the Institute:

- Advanced technologies of welding in the solid phase
- Advanced technologies for fusion welding
- Durability and reliability of welded structures
- Technology surfacing and coating
- Mathematical modeling and automation of welding processes
- Nanostructured materials, nanotechnology

For example, some developments

Astronaut using equipment developed at the institute.

The first experiment for welding in open space





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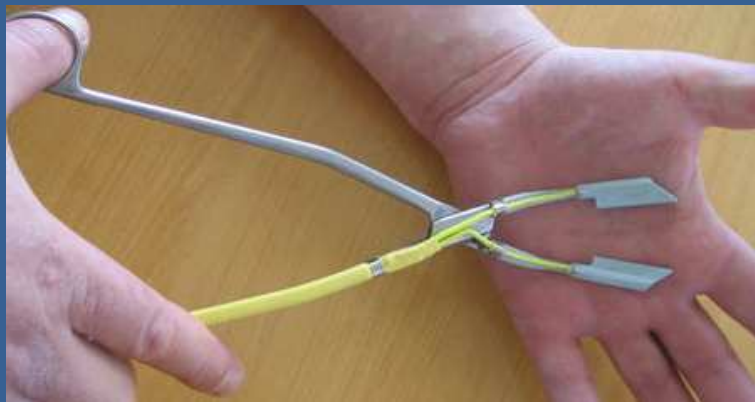
**UNDERWATER WELDING**



**PIPELINE WELDING**



**WELDING OF RAILS**



**WELDING OF LIVING TISSUE**



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Development department "Physical-metallurgical processes  
of welding for light metals and alloys"

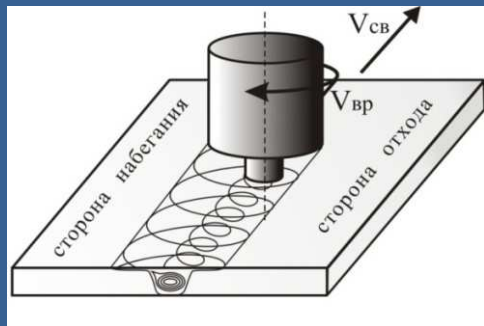


Chart of friction stir welding



Type of weld



Examples of compounds



The department works on developing the technology of friction stir welding, diffusion welding, argon-arc welding.

Some of the types of compounds which have been obtained DSV



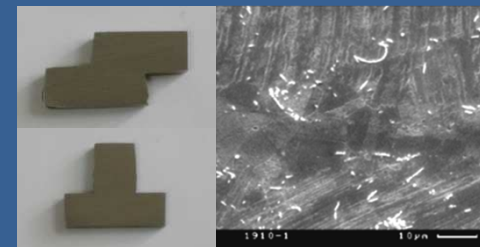
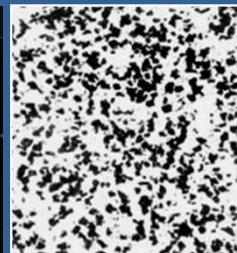
STEEL + Al



TITAN + Cu



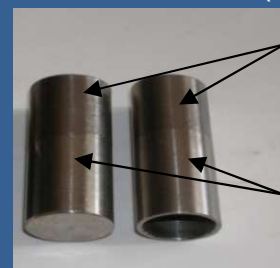
KM + KM (AMr5+27%Al<sub>2</sub>O<sub>3</sub>)



$\gamma$  - TiAl +  $\gamma$  - TiAl

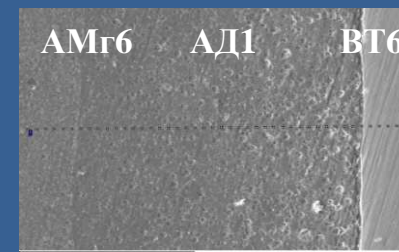


STEEL+ STEEL



STEEL

TITAN



DSV investigated by welding processes both homogeneous and heterogeneous metal



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## Role and responsibility in the project

(active part WP2)

- Study of the effect of temperature and pressure on the structure Ni-Cr and Nb alloys
- Develop and manufacture tooling for welding honeycomb
- Studying the influence of the welding cycle (T, P, t) on the strength properties of welded joints

(active part WP3)

- Determine the optimum welding parameters
- Analysis of the possibility of applying for welding alloys foils of different chemical composition and structure
- Produce ingots for production of foils
- Produce foil
- According to the analysis of the microstructure and properties of the compounds to optimize the composition of the foil
- Develop and manufacture tooling for welding three layered thermal protection elements.
- Make batch three layer heat-shielding elements.



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Paton Bridge – the first welded bridge in the world



THANK YOU FOR YOUR  
ATTENTION