FUNDED BY THE
EUROPEAN UNION
NextGenerationEU

UNIVERSITY
OF RUSE

NATIONAL
RECOVERY AND
RESILIENCE PLAN

PVD Coatings Deposition

- Prof. DSc Maria Nikolova, PhD
- mpnikolova@uni-ruse.bg
- Dept. of Material Science and Technology

RESEARCH UNIVERSITY: University of Ruse “Angel Kanchev” , 3.1.4. DIGITAL, LAYERED, ENERGY ASSISTED INNOVATIVE TECHNOLOGIES AND MODELS
Project № BG-RRP-2.013-0001, financed by the European Union-NextGenerationEU, through the National Recovery and Resilience Plan of the Republic of Bulgaria

FUNDED BY THE
EUROPEAN UNION
NextGenerationEU

UNIVERSITY
OF RUSE

NATIONAL
RECOVERY AND
RESILIENCE PLAN

PVD Techniques for Thin Film Deposition

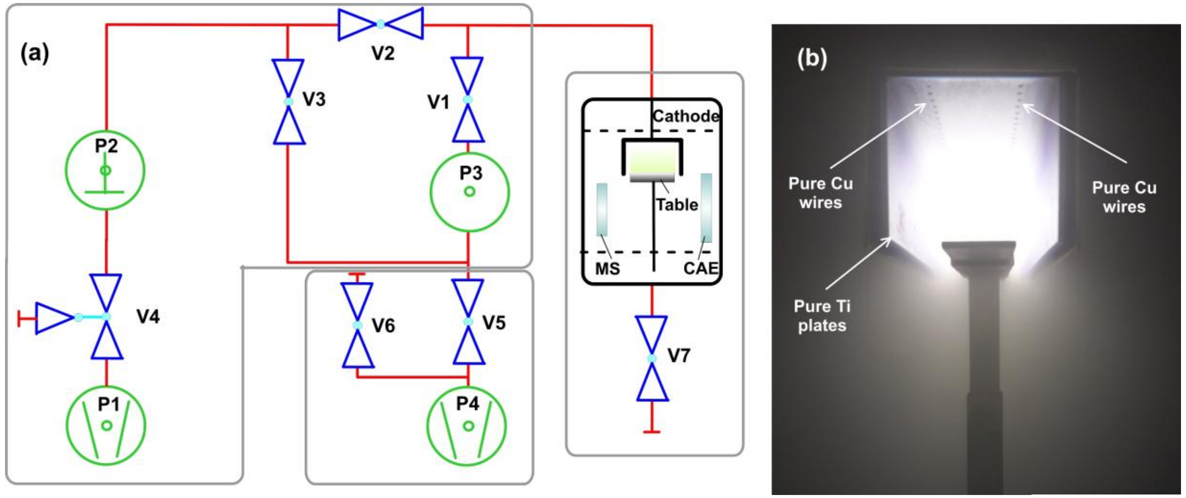


Figure 1. A schematic diagram of the installation (a) with its vacuum pumping system: P1 and P4 – fore vacuum roughing pump, P2 - booster-type bi-rotor vacuum roughing pump, P3 – diffusion pump, V1÷V7 – vacuum valves (gate valves); (b) photograph of the working glow-discharge system

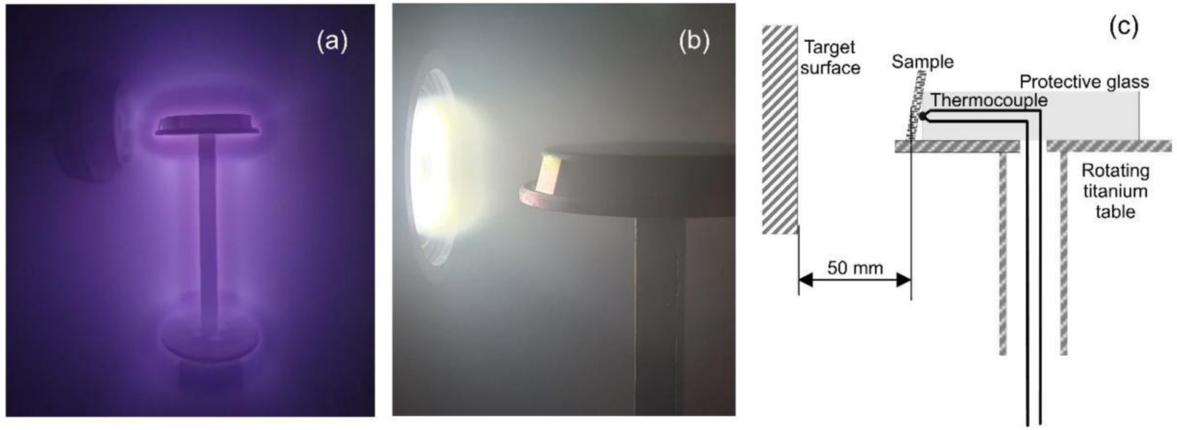


Figure 2. Images of the glow-discharge cleaning (**a**) DC magnetron sputtering of an oxide coating from Ti-Cu target (**b**) and a schematic view of the experimental setup with a thermocouple sensor (**c**).

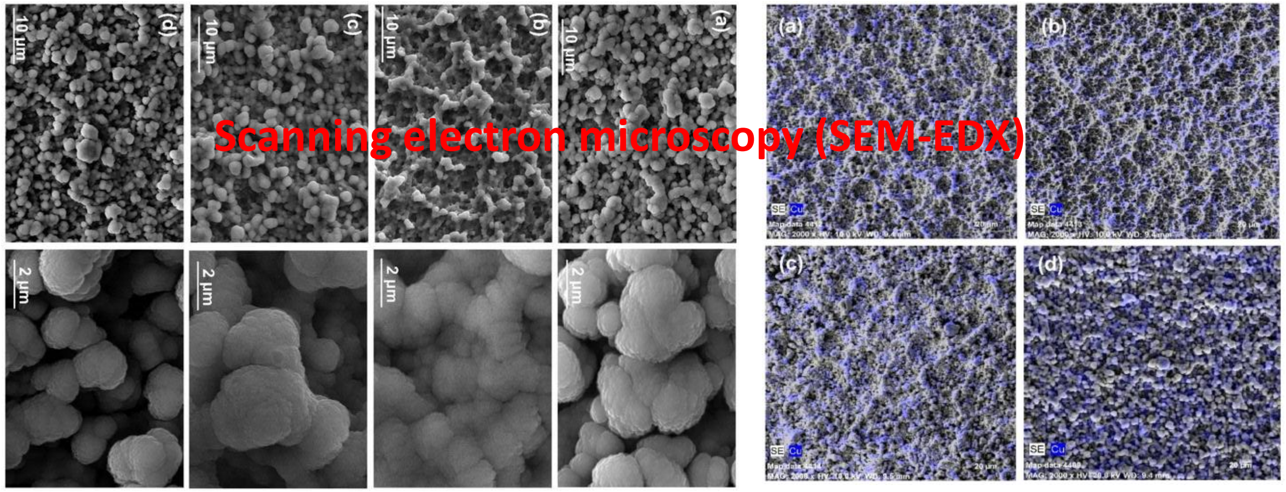
RESEARCH UNIVERSITY: University of Ruse “Angel Kanchev” , 3.1.4. DIGITAL, LAYERED, ENERGY ASSISTED INNOVATIVE TECHNOLOGIES AND MODELS
Project № BG-RRP-2.013-0001, financed by the European Union-NextGenerationEU, through the National Recovery and Resilience Plan of the Republic of Bulgaria

Thin Films' Characterization

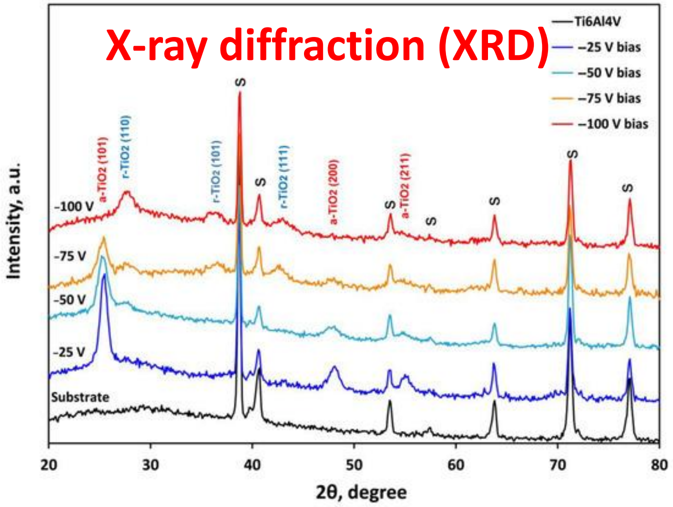
FUNDED BY THE
EUROPEAN UNION
NextGenerationEU

UNIVERSITY
OF RUSE

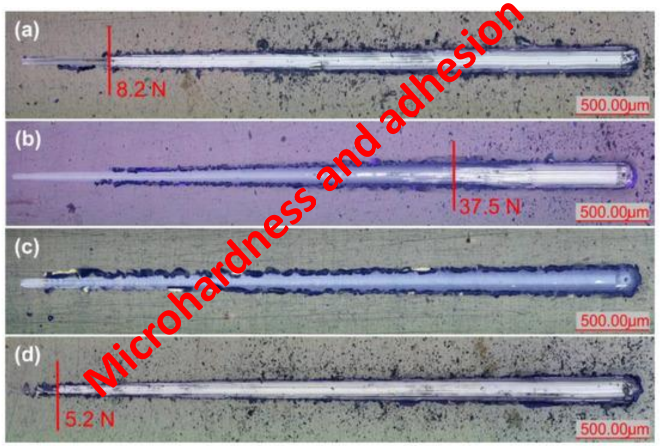
NATIONAL
RECOVERY AND
RESILIENCE PLAN



Scanning electron microscopy (SEM-EDX)

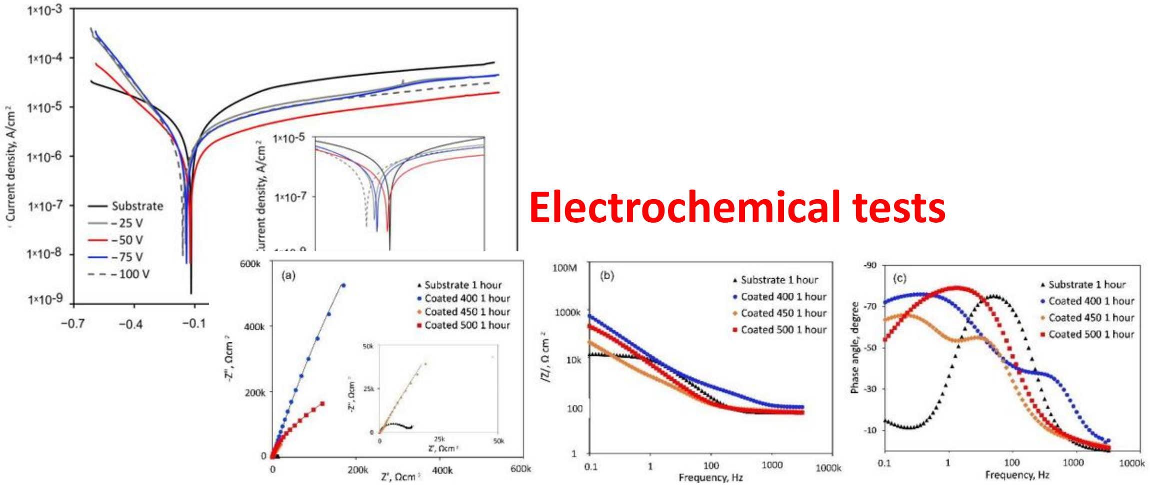


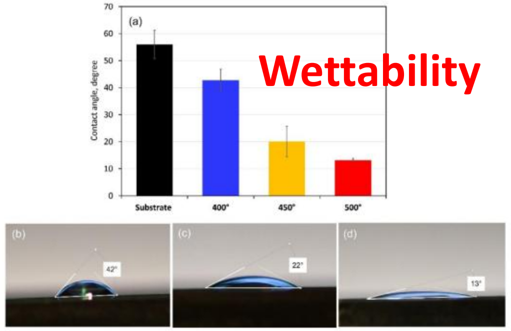
X-ray diffraction (XRD)



Microhardness and adhesion

Electrochemical tests





Wettability

RESEARCH UNIVERSITY: University of Ruse “Angel Kanchev” , 3.1.4. DIGITAL, LAYERED, ENERGY ASSISTED INNOVATIVE TECHNOLOGIES AND MODELS
Project № BG-RRP-2.013-0001, financed by the European Union-NextGenerationEU, through the National Recovery and Resilience Plan of the Republic of Bulgaria