Experimental setup for spraying chalcogens onto a surface in a gas discharge

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Plasma spraying is an innovative technology that is widely used in various industries. Its exceptional properties such as high adhesion, surface density, fast application, wide material selection and environmental friendliness are essential for protection, coverage and surface coatings and components. Plasma spraying is a spraying in which the energy source is plasma. As a rule, the inert gas argon and/or helium is used to form plasma. The material in powder form is then fed into the plasma where it is melted and atomized. The sprayed material is deposited on the surface of the product, where a thin and dense layer is formed.

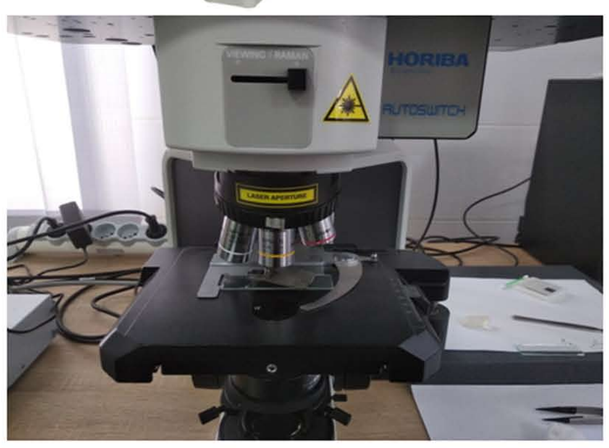
Relevance of research

Plasma sputtering is widely used in various industries due to its properties and capabilities:

1 Wear protection
2 Corrosion protection
3 Thermal insulation
4 Electrical insulation
5 Decorative coatings
6 Medical industry
7 Electronics and semiconductors

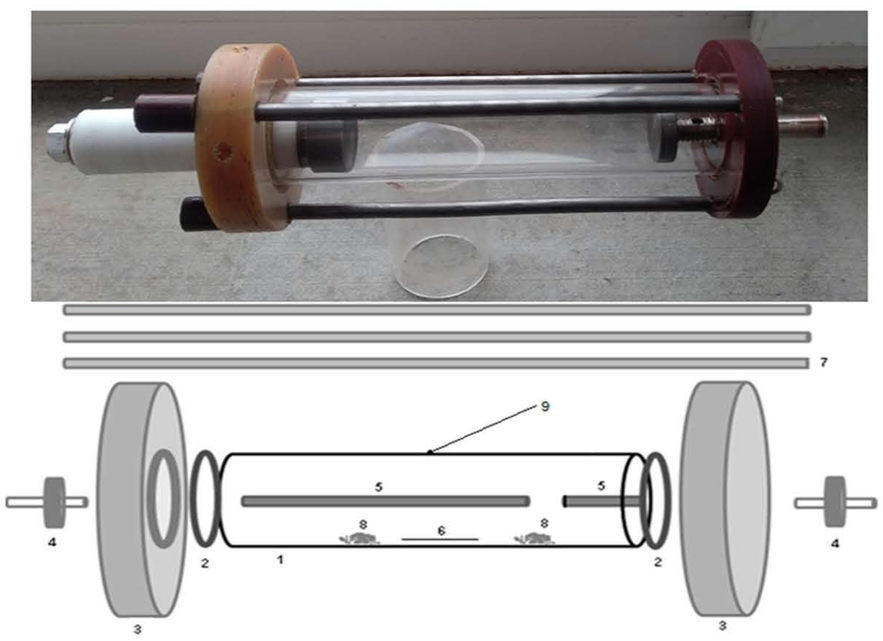
Plasma spraying offers a number of advantages that distinguish it from other technologies:

1 High adhesion
2 Unique protection properties
3 Uniform application of coatings
4 A wide selection of materials
5 Ecological safety



XploRA™ PLUS MicroRaman Spectrometer - Confocal Raman Microscope

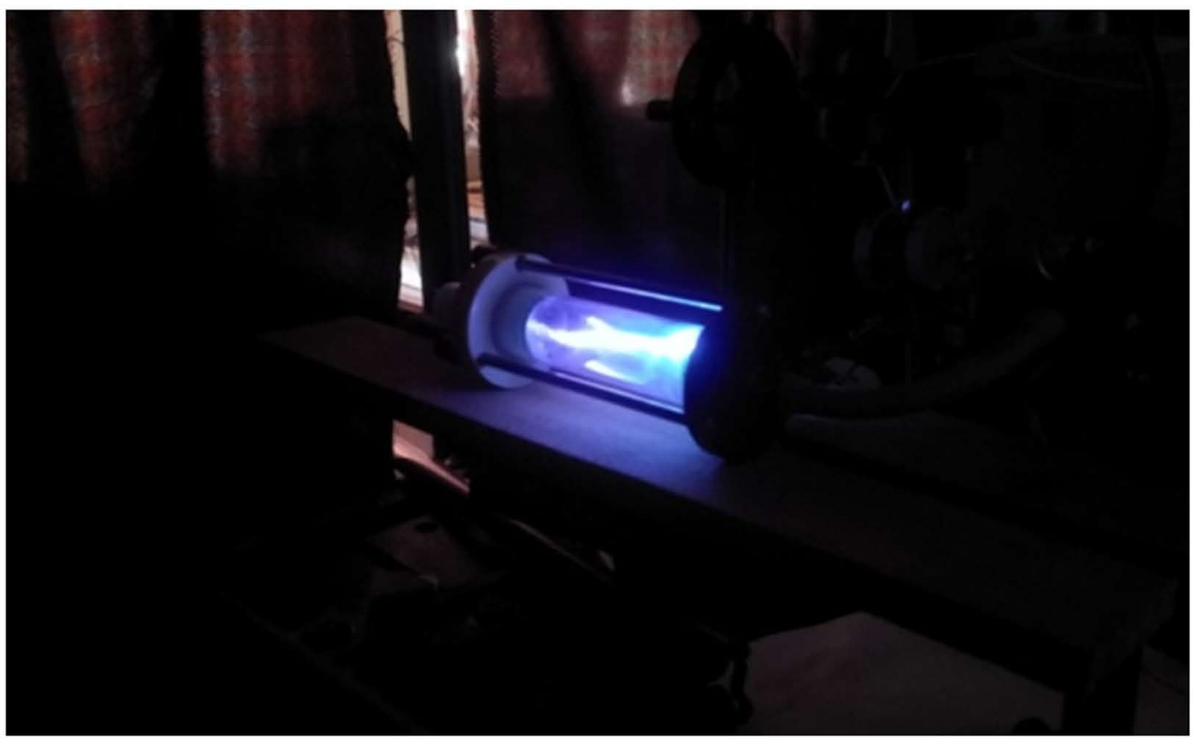
General view of a universal discharge camera.

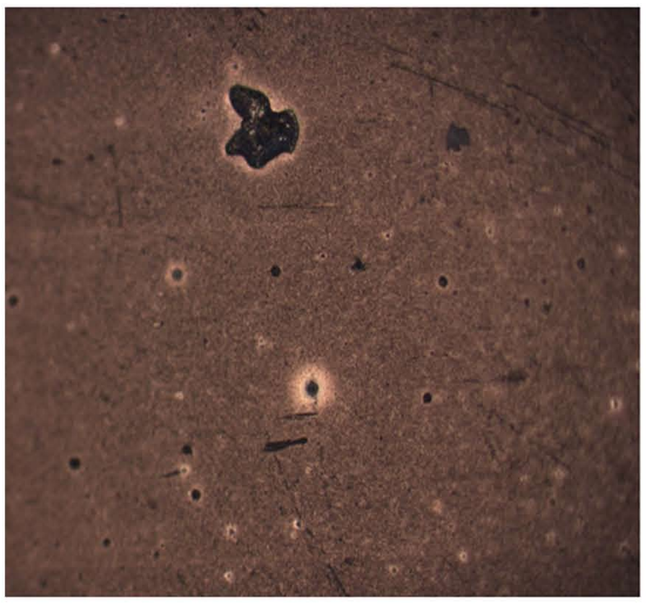


1 – quartz tube, 2 – vacuum gasket, 3 – dielectric flanges, 4 – universal high-voltage inputs, 5 – metal electrodes, 6 – sputtering glass, 7 – fixing pins, 8 – sulfur, 9 – thermocouple.

The results obtained by TheXploRA™ PLUS MicroRaman Spectrometer - Confocal Raman Microscope

Working laboratory GDT for spraying chalcogens onto a surface in a gas discharge





Exposure time 1 s, 100 scans, 10x increase, 10% power. 215 nm, 279 nm, 341 nm, та 360 nm

Conclusions

The first results were obtained from spraying chalcogens onto a surface in a gas discharge

The obtained experimental data made it possible to create a source of low-temperature plasma based on sulfur vapors (an application for a useful model is being prepared), which can find practical application in physical electronics, medicine, and light engineering.