

## Diagnosing tuberculosis quicker and cheaper with the help of atmospheric pressure plasma technology

**Nine European companies and research institutes will team up in the EU-funded research and innovation project “IP4Plasma” in an effort to fight the second biggest killer among infectious diseases. The aim is to produce a highly sensitive tuberculosis test that will allow a diagnosis within minutes with costs as low as 1€ per test.**

The key to preventing the spread of the second biggest killer among infectious diseases - tuberculosis - is to rapidly identify people who are contagious. Yet current diagnostic methods are slow, expensive and unreliable. Now, within the IP4Plasma project, atmospheric pressure plasma technology developed by leading research institutes and equipment manufacturers in Europe will be used to develop quicker and cheaper tuberculosis test with better sensitivity and specificity. A mobile pilot scale plasma treatment system will be designed and built for this purpose, based on existing experience and protected intellectual property, and novel processes for manufacturing of diagnostic tests will be developed and validated in end-user production facilities.



The gold standard for a complete medical evaluation for tuberculosis takes several weeks including a medical history, a physical examination, a chest X-ray and microbiological examination, as well as a tuberculin skin test and surgical biopsy. In contrast, the tuberculosis test to be developed in the IP4Plasma project will allow a diagnosis within minutes, will be highly sensitive (>80% for TB positive cases detected) and specific (>99%). What is more, it promises to be inexpensive – approximately 1€ for endemic countries and 5€ for Western Europe - and be carried out without any test installation.

### Sensitive HIV test, wound dressings and other applications



In addition to the tuberculosis test, the project will demonstrate the versatility of atmospheric plasma technologies in manufacturing of medical applications. Other demonstrators to be built in the IP4Plasma project include a cheaper and more sensitive test for HIV and advanced wound dressings. The aim for the wound dressing demonstrator is to add anti-inflammatory properties to the surface of materials and reduce the costs by 20% by using cheaper base materials and less chemical treatments.

Atmospheric pressure plasma technologies have vast innovation potential for advanced surface engineering of many types of materials. They are environment friendly, solvent-free technologies which make use of the special chemical and physical properties of reactive species generated in an electrical plasma discharge: e.g. ions, electrons, radicals, photons or excited states of molecules and atoms - including enzymes and proteins, which are the specific target in the IP4Plasma project.

### IP4Plasma brings innovations from laboratories to industrial implementation

In the IP4Plasma project, atmospheric pressure plasma equipment manufacturers and end-users will work with leading experts in research and technology innovation to overcome the barriers to commercial application of a unique IPR portfolio. The aim is to bring cutting-edge IPR-protected innovations from the laboratory scale to industrial implementation for advanced surface treatment of materials. This will be done by demonstrating the suitability of the

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technology for existing and new industrial applications in the medical products and diagnostics sector. Consequently, major new business opportunities with substantial market potential are expected to arise for the SME-driven consortium.

The IP4Plasma project is scheduled to run for three years between 2014 and 2016, with the overall budget of 4,8MEUR, of which 3,5MEUR is funded by the European Union under the 7<sup>th</sup> Framework Programme for Research and Innovation.



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