

Technology Offer

High target utilisation sputtering system for high performance coatings

Summary

A UK materials R&D focussed SME has patented a high target utilisation sputtering system capable of producing high performance thin film coatings which allows low temperature deposition onto plastics, high deposition rates, and low stress coatings for virtually flat thin films on plastics. Industry partners working with flexible electronics, transparent conducting oxides, high rate dielectrics are sought to test the system against their own needs via licensing or joint venture agreements.

Last Update	15 June 2016
Expiration Date	20 December 2016
Reference	TOUK20150330001

Details

Description

A number of industries benefit from the application of thin film coatings that can exhibit a host of key differentiators including low temperature deposition onto plastics, very high deposition rate coatings, low stress coatings enabling virtually flat thin film coatings on plastics, high density coatings and high adhesion coatings but it is not always straightforward to create such coatings using conventional methods.

The UK based materials R&D focussed SME described here has developed a patented plasma source based technology that produces a high density low energy magnetised plasma (ion density $>10^{13} \text{ cm}^{-3}$ and ion energy $<10 \text{ eV}$) without the requirement for a target to strike or maintain the plasma. Using these methods it is possible to produce material properties unachievable by conventional deposition technologies.

The confined plasma interacts with the substrate coating process in a unique and beneficial manner compared to conventional sputter processes. An optimal balance of plasma density and deposition rate may be set to deliver a low energy 'plasma assist' to the deposition process without the need for substrate bias. This beneficially impacts the thin film coating properties and enhances reactive deposition processes thereby resulting in the ability to coat fast deposition rate, high density films on to temperature sensitive polymeric substrates.

The system offers benefits to industry partners working with:
Flexible electronics
Transparent conducting oxides

High rate dielectrics
High mobility transparent thin film transistors (TFTs)
Photonics & precision optics
Electroluminescent devices
Barrier layers
Protective & resistant coatings

The company seeks partners working with flexible electronics, transparent conducting oxides, and high rate dielectrics to test the system against their own needs via licensing or joint venture agreements. If the system can be tailored to meet requirements via a joint venture or a licensing arrangement to allow feasibility testing and development work to be carried out, the SME envisages future licensing or other collaborative agreements with the partner.

Advantages and Innovations

Compared to competing techniques on the market this offer provides the following key benefits.

- The application of remotely generated plasma means that independent control of all process parameters is achievable including target voltage and ion current, something that is not possible using competing methods and which facilitates the production of superior high performance coatings.
- The low temperature conditions applied mean it is possible to deposit plastic or other 'delicate' substrates and by applying a stable high rate reactive process virtual elimination of target poisoning is possible since the surface of the target is uniformly eroded.
- There is the potential for multilayer devices to be created using this approach as the systems have the ability to deposit multiple layers without breaking vacuum - a key benefit.

Stage of Development

Already on the market

IPR Status

Patents granted

Comment Regarding IPR status

UK Patent GB 2 343 992.

Profile Origin

Other

Keywords

Technology

02002002	Coatings
02002015	Surface treatment (painting, galvano, polishing, CVD, ..)

Market

03001001	Semiconductors
03001008	Display panels

08001006 Processes for working with plastics
08001007 Coatings and adhesives manufactures
08001009 Speciality/performance materials: producers and fabricators

NACE

M.72.1.9 Other research and experimental development on natural sciences and engineering

Network Contact

Issuing Partner

BERLIN PARTNER FUER WIRTSCHAFT UND TECHNOLOGIE GMBH

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Open for EOI : Yes

Dissemination

Send to Sector Group

Materials

Client

Type and Size of Organisation Behind the Profile

Industry SME 11-49

Year Established

0

Already Engaged in Trans-National Cooperation

Yes

Languages Spoken

English

Client Country

United Kingdom

Partner Sought

Type and Role of Partner Sought

- Type of partner sought: Industry or research organisations.

- Specific area of activity of the partner: Developers of flexible electronics, transparent conducting oxides, high rate dielectrics and a number of related technologies including high mobility transparent TFTs, photonics & precision optics, electroluminescent devices, barrier layers and protective & resistant coatings.

- Task to be performed by the partner sought: Work with the company to apply the system to meet their own needs via licensing or joint venture agreements.

Type and Size of Partner Sought

SME 11-50, University, Inventor, R&D Institution, SME <10,>500 MNE, 251-500, SME 51-250, >500

Type of Partnership Considered

License agreement

Joint venture agreement