NewSkin: Innovation Eco-system to Accelerate the Industrial Uptake of Advanced Surface Nano-Technologies.

Value Propositions: Robust and durable functional oxides thin films

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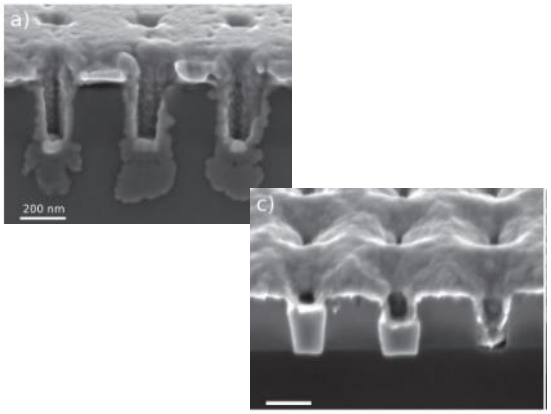
HiPIMS –high power impulse magnetron sputtering of thin films

- Compatible with deposition by DC magnetron sputtering
- Provides large fraction of ions in the deposition

Benefits of HiPIMS: metal coatings

Conformal coverage



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Metal filling by high power impulse magnetron sputtering

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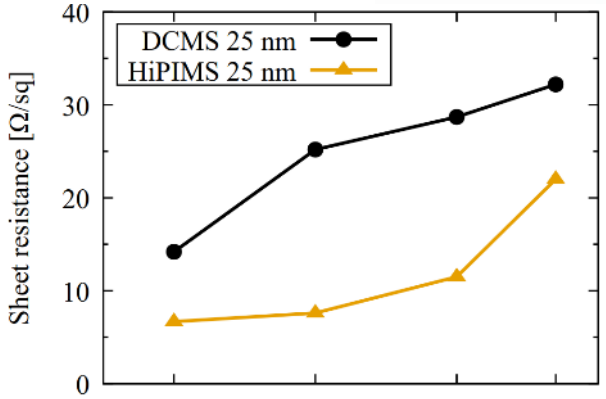
Improved conductivity

Highly conductive ultrathin Co



Highly conductive ultrathin Co films by high-power impulse magnetron sputtering

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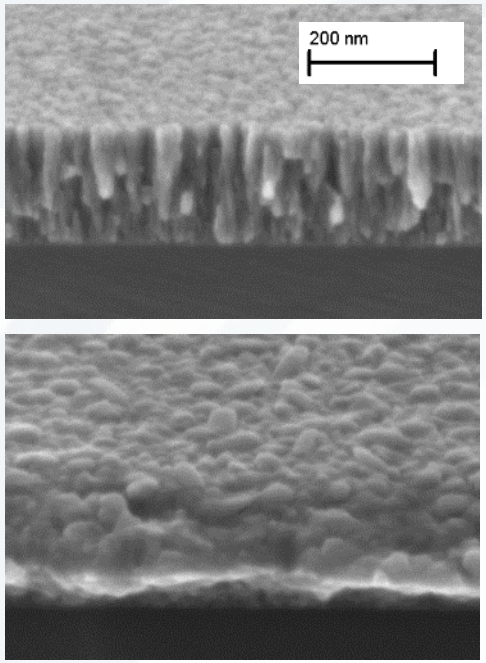
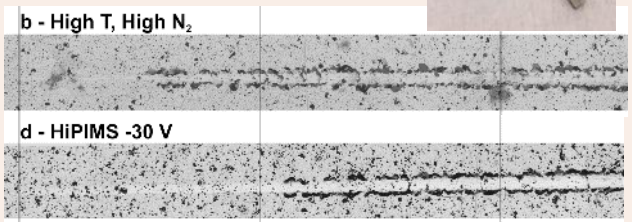
Ductile Ti



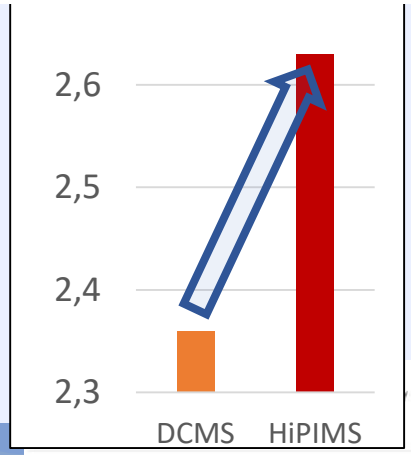
HiPIMS –high power impulse magnetron sputtering of thin films

- Benefits of HiPIMS

Reduced stress and improved adhesion



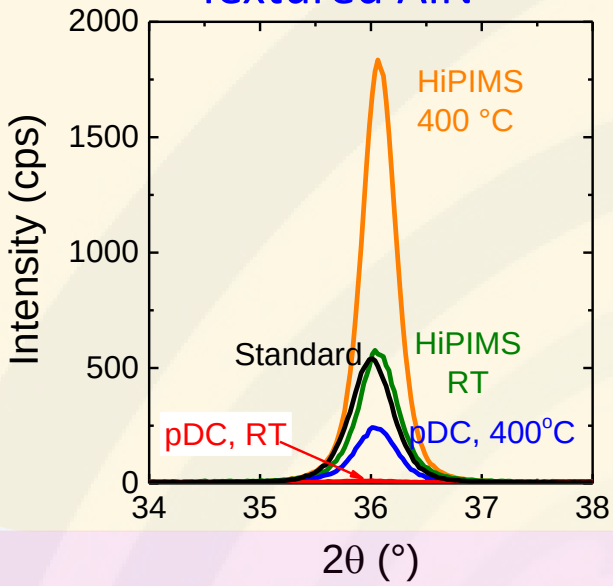
Refractive index: TiO_2



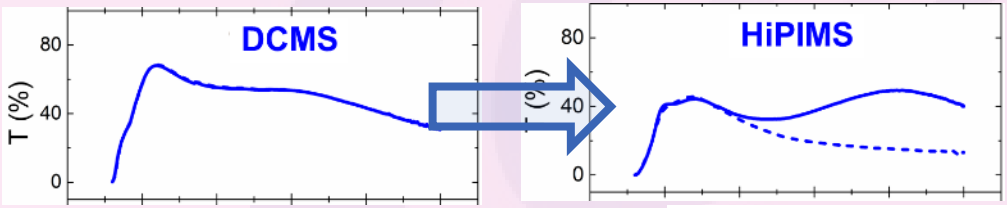
Effect of peak power in reactive high power impulse magnetron sputtering of titanium dioxide

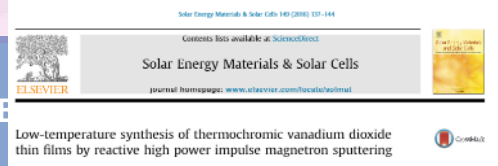
Improved crystal structure

Textured AlN



Reduced growth temperature of thermochromic VO_2





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Value Propositions (VP) for thin films on components and parts

- **Target 1:** initial demonstrative case study IR optical components with NewSkin partners MGM providing a first showcase
  - HfO_2 as IR transparent wear resistant top-coat on lenses

- **Target 2:** initial demonstrative case study anti-sticking coating on moulds with NewSkin partners MGM providing a first showcase
  - Al_2O_3 as anti-sticking surface for moulding

- **Target 3:** new value propositions for other case studies
  - VP2: Self-cleaning surfaces (tiles, components) using photocatalytic TiO_2
  - VP3: Wear and corrosion resistant surfaces (engineering components) using CrN

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Focus on NewSkin Value Propositions (VP) for thin films on flexible substrates (roll to roll)

- **Target 1:** initial demonstrative case study TiO_2 with NewSkin partners Chromogenics providing a first showcase
  - TiO_2 UV blocking barrier layer and self-cleaning surface on polymer foils for smart windows

- **Target 2:** new value propositions for other case studies
  - VP1: Transparent conductors (Windows, solar cells, flexible electronics) ITO nad NiO thin films for electrochromic windows
  - VP2: Anti-bacterial surfaces on foils (similar to target 1 case study)
  - VP3: metallized foils –decorative coatings, diffusion barriers
  - VP4: Sun protection window film (low-E and solar control coatings)

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Summarise your services offer

- Process development for sputtering of thin films – improving existing materials by the use of HiPIMS
- Surface treatment of small parts and components – set of basic materials, possibility to include more materials
- Thin films on polymer foils –ITO, NiO, TiO2
- Open to launch collaborative R&D projects for large scale surfaces (ceramic, glass, metal, polymer…) with industrial companies

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Thank you!

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