Knowledge Transfer Office
香港城市大學
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# Entropy-Stablilized Ceramic Thin Film Coating, Method for Preparing the Same, and Component Coated with the Same

Manufacturing

Nanotechnology and New Materials

Sensors

## Opportunity

Entropy stable ceramics have superior physical and mechanical properties. Current manufacturing methods are limited to additive processes such as sputtering, laser cladding, atomized spray pyrolysis or high temperature sintering processes. However, this method of manufacture has several insurmountable limitations. For example, these entropy -stabilized ceramic techniques typically require expensive equipment such as vacuum, shielding gas, or complex control systems. In addition, these techniques only provide small area manufacturing with low uniformity, small scale production, and in fact the manufacturing process is very cumbersome. Thus, entropy-stable ceramics are only suitable for several entropy-stable alloys and are not suitable for commercialization.

**IP Status**
Patent granted

Technology Readiness Level (TRL) 2


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## Technology

The invention relates to an entropy-stable ceramic thin-film coating, a method for the production thereof and an element coated with the coating. A method of producing an entropy-stable ceramic thin film coating includes producing a first layer formed from a plurality of metal elements, and reacting the first layer with anions to convert at least a portion of the first layer into a second layer. The invention also discloses an entropy-stable ceramic thin film coating and an element coated with the entropy-stable ceramic thin film coating.

## Advantages

- An economical and efficient anodizing process for producing entropy stable ceramic coatings.
- A solution-based approach is highly compatible with various industrial applications.
- The entropy-stable ceramic grown on the substrate from the entropy-stable alloy exhibits excellent chemical stability.
- It supports the fabrication of large area films.

## Applications

- Cell phone
- Automobile housings