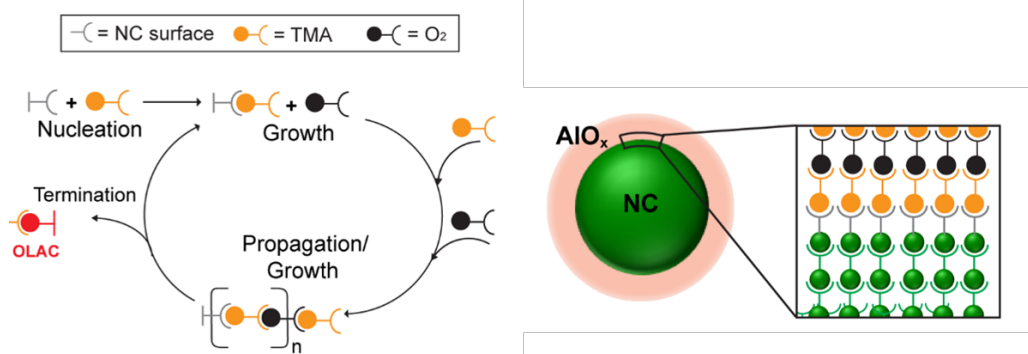


A METHOD FOR PRODUCING AN OXIDE SHELL AROUND NANOCRYSTALS



Ref. Nr

6.1973

Keywords

Nanoparticles, materials, coating, metal oxide

Intellectual Property

PCT application

Publications

J. Am. Chem. Soc. 2019, 141, 8254–8263

Date

25/09/2020

Description

Coating nanoparticles is essential for many industrial applications, spanning cosmetics to food industry and catalysis.

Coating nanoparticles by atomic layer deposition (ALD) can be performed in gas phase or by the Stober method in solution but each have important limitations. Colloidal ALD (c-ALD) allows to overcome some of these issues but existing methods lack the ability to tune the core-shell size when the shell is a metal oxide.

The invention is a solution-based method to grow a metal oxide shell by atomic layer deposition with a tunable thickness.

Advantages

- Method occurs at room temperature and requires short reaction time
- Final particles stay soluble in solution or can be dried and used as powders, depending on the desired application.
- Especially applicable to nanoparticles which are highly sensitive to polar environment (i.e. water or alcohols).
- Allow to finely tune the size of the oxide shell around a metal containing nanocrystal core

Applications

- cosmetic
- food industry
- catalysis

Opportunities

- Licensing or collaboration