These deposition process is achived by using atomic layer deposition (ALD) method. The thin films are obtained in an ALD reactor. The principles of the ALD method are based on sequential, self-limiting surface reactions on a substrate (Figure 1).



**Figure 1.** Schematic demonstration of ALD reactions: AB is an precursors which reacts with oxidant sequentially

Thanks to its self-limiting growth mechanism, it allows the growth of thin film of the accurate thickness (even very low thickness like 1 nm) with excellent uniformity, conformity and accuracy on large and complex surfaces (Figure 2).



**Figure 2.** Cross section of the A and B nanostructure layers

Compact films are obtained in ALD are achieved by an AB binary sequential reaction, separated by washing flow (generally N2). ALD method, which is very slow process, provides perfect surface properties thanks to its self-limit growth mechanism, compared to the other deposition systems like chemical vapour deposition or physical vapor deposition (thermal deposition, magnetron sputtering deposition).