

Overview of early publications on Atomic Layer Deposition

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Atomic layer deposition (ALD) is a technique that has been instrumental in enabling the semiconductor industry to maintain its adherence to Moore's Law with smaller and smaller dimensions, and is becoming a game-changer in several other fields. As for any significant technology, it is interesting and important to know where the technique came from. How was the concept developed? Which were the first ALD experiments? When, where and by whom were they made? To explore these questions, a worldwide open collaborative initiative called the "Virtual Project on the History of ALD (VPHA)" was launched in summer 2013. This poster represents the first outcome of the project, lists the early ALD publications up to 1986, and provides individual comments on the significance and contents of the publications. ALD was invented independently (at least) twice, under the names "molecular layering" and "atomic layer epitaxy". From literature that has long been publicly available in the English language and which can be found through scientific online databases, it is seen, for example, that a report of growth of TiO₂ thin films on planar substrates from TiCl₄ and H₂O reactants by ALD was published in 1970. This overview should raise awareness of the early ALD work that was carried out in countries such as Bulgaria, Estonia, Finland, France, Germany, Japan, the Soviet Union, and the United States. This will help today's growing global ALD community to put their research into context.

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