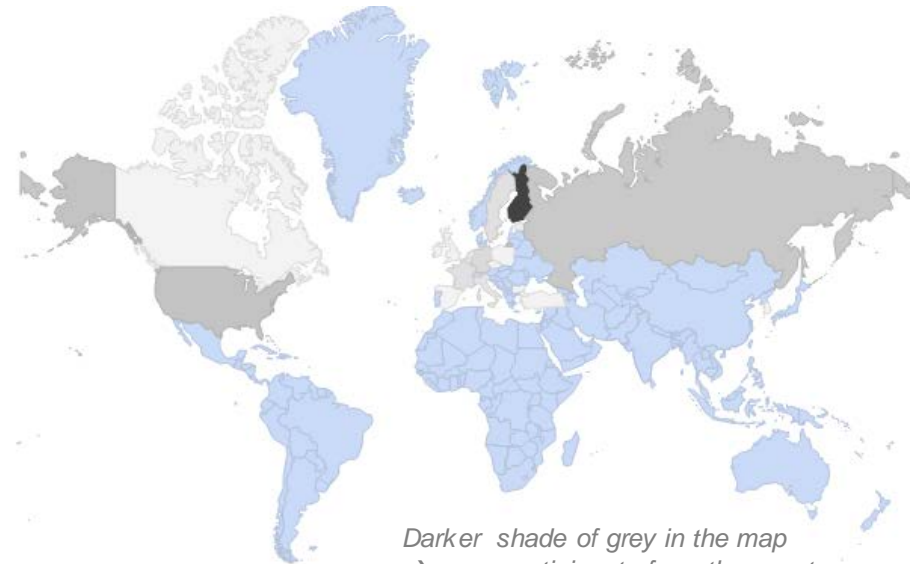


On the early history of ALD: most significant works and applications



VPHA, vph-ald.com: *Worldwide collaborative effort, in an atmosphere of openness, respect and trust*

- Virtual Project on the History of ALD (VPHA) started in 2013
- Volunteered scientists from all around the world work together to better understand the early days of ALD.
- We collect, read and comment upon ALD literature up to 1986.



*Darker shade of grey in the map
→ more participants from the country*

This poster:

- Voting → conclusive recommended reading list of early ALD publications

In VPHA, as of June 20, 2016

- 70 co-authors from
- 19 countries in
- 3 continents

T. Suntola, J. Antson, **Menetelmä ja laite yhdisteohutkalvojen kasvattamiseksi. (~Method and apparatus for the growth of compound thin films).** Patent FIN 52359 - filed 29 November 1974, published 30 May 1976, granted 10 September 1977. US Patent 4 058 430

V. B. Aleskovskii, **Chemistry and technology of solids.** J. Appl. Chem. USSR., 47, 2207-2217, 1974; Translated from: Zh. Prikl. Khim. 47, 2145-2157, 1974).

T. Suntola, J. Hyvärinen, **Atomic layer epitaxy**, Annu. Rev. Mater. Sci., 1985, 15, 177-195

T. Suntola, A. Pakkala, S. G. Lindfors, **Menetelmä ja laite yhdisteohutkalvojen kasvatuksessa (~Method and equipment for deposition of compound thin films)** [in Finnish], SF patent 57975, Feb 28, 1979. US Patent 4389973 and 4413022 A

C. H. L. Goodman, M. V. Pessa, **Atomic layer epitaxy**, J. Appl. Phys., 1986, 60, R65-R81

A. M. Shevjakov, G. N. Kuznetsova, V. B. Aleskovskii, **Interaction of titanium and germanium tetrachlorides with hydrated silica, Chemistry of high temperature materials.** Proceedings of 2nd USSR conference on high temperature chemistry of oxides, November 26-29, 1965, Leningrad, USSR, Nauka, Leningrad, USSR, p. 162-168 1967.

S. I. Kol'tsov, **Synthesis of solids by the Molecular Layering Method, Doktor Nauk thesis ("professor's thesis")**, 1971, 383 p. [In Russian]

S. M. Bedair, M. A. Tischler, T. Katsuyama, N. A. El-Masry, **Atomic layer epitaxy of III-V binary compounds**, Appl. Phys. Lett., 1985, 47, 51-53.

(... list continues at poster ...)