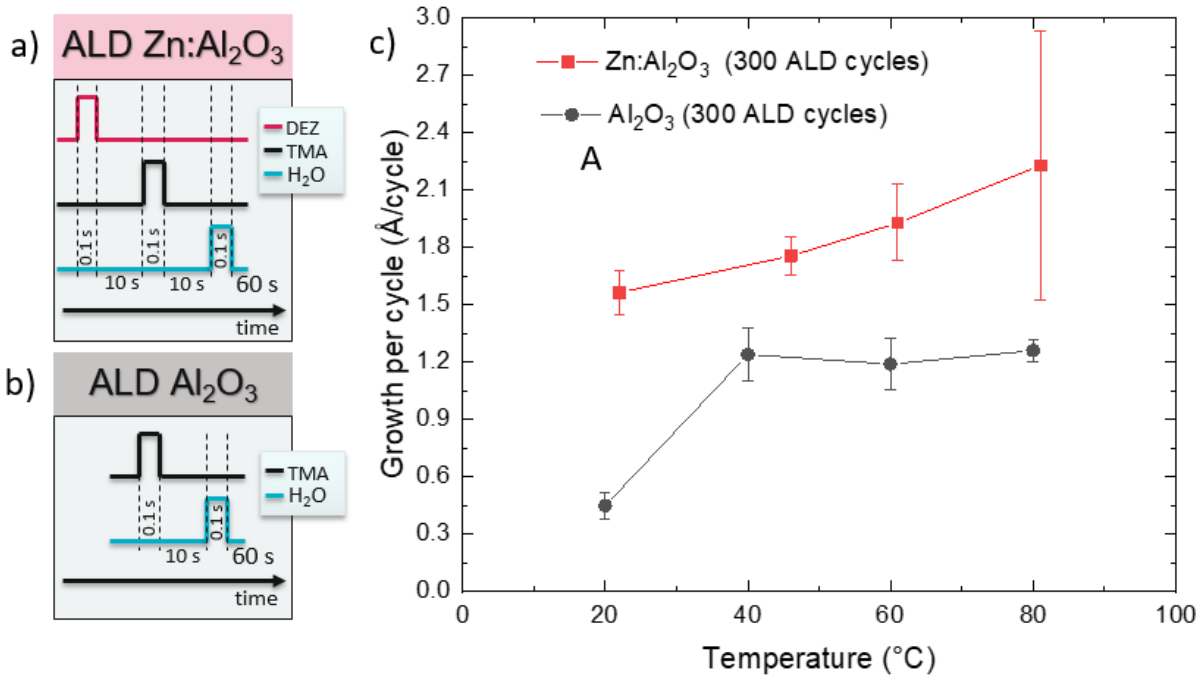

Figure 1 In a) and b) we see an illustration of a pulse cycle used during the ALD cycles. For the new process a) the precursors used are diethylzinc, trimethylaluminium and water, and a nitrogen purge gas is used in-between pulses of precursors. In c), the growth per cycle is compared between alumina and zinc-doped alumina, for ALD deposition temperatures ranging 20˚ C to 80º C. The thickness is measured with ellipsometry on Si substrates and the growth per cycle is obtained by the division of thickness with number of cycles for the ALD process.

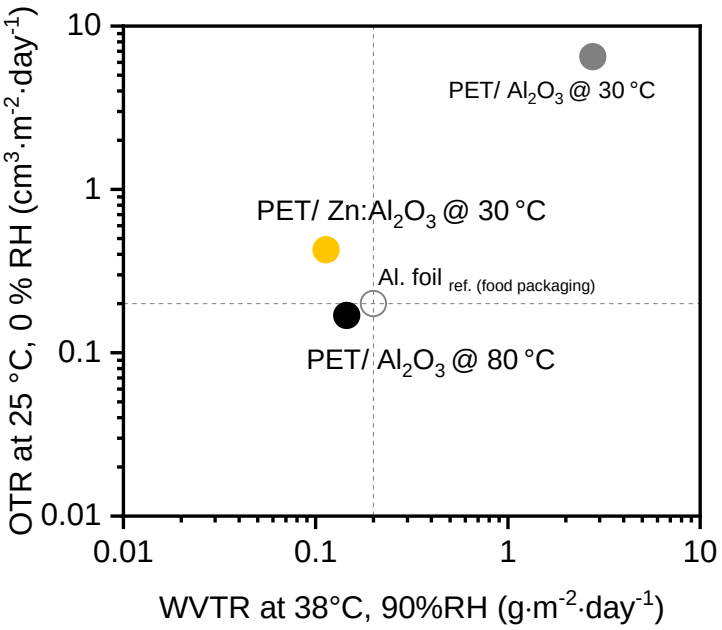

Figure 2 The gas barrier properties are evaluated in this figure. The y-axis is oxygen transmission rate at 25 ˚C in dry atmosphere and the x-axis is the water vapour transmission rate at 38 ˚C with 90% relative humidity. These measurements are performed by *Mocon*™ test. Al-foil is used as a reference (open circle). The circles represent the gas permeation values of different depositions by ALD on 23 µm polyethylene terephthalate (PET) substrates with 25 nm alumina thin-film. We can see, that with the new process at 30 ˚C, which results in Zinc-doped alumina, the barrier properties are comparable with the alumina at 80 ˚C. Alumina at 30 ˚C has much worse permeations values.