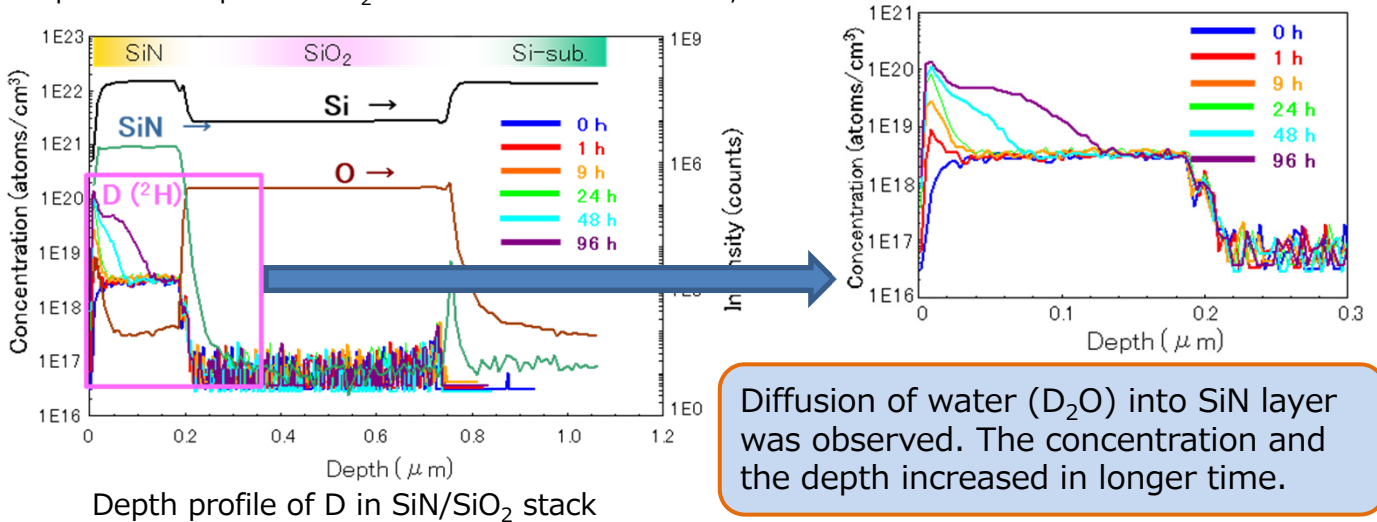


Water permeability analysis by D-SIMS

Use of isotope-labeled water, D_2O , and D-SIMS enables us to clarify permeated D_2O profile after exposure in D_2O vapor. This method is promising for evaluating the water permeation behavior both in inorganic films and organic films.

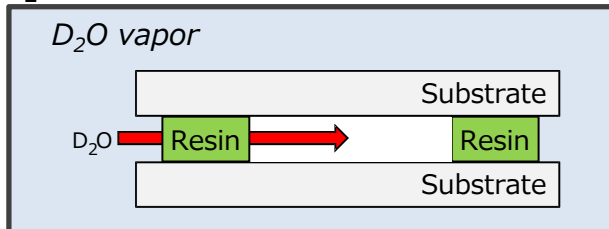
For inorganic capping layer of low diffusion rate, D-SIMS depth profiling is applicable.

Samples were exposed to D_2O -water for 0-96h at $120^\circ C$, 2atm

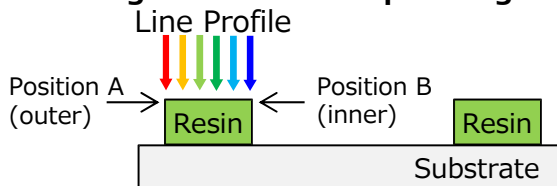


For organic materials of high diffusion rate, resin etc., we propose D-SIMS line profile analysis to evaluate long-distance diffusion.

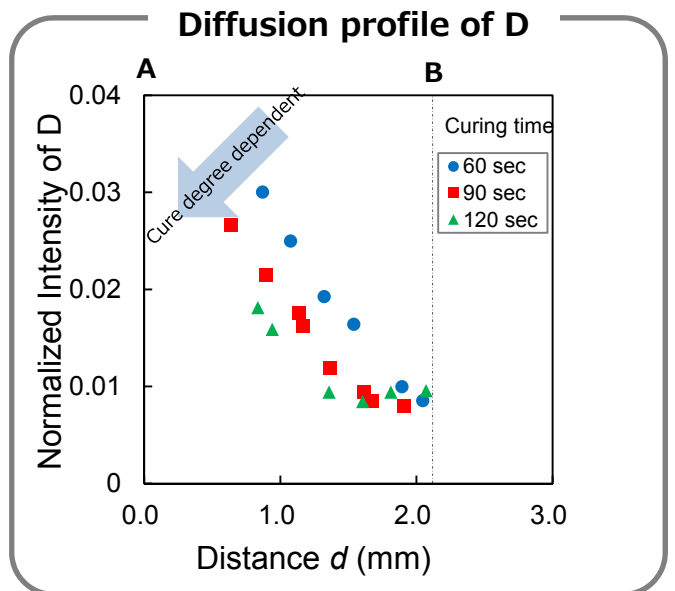
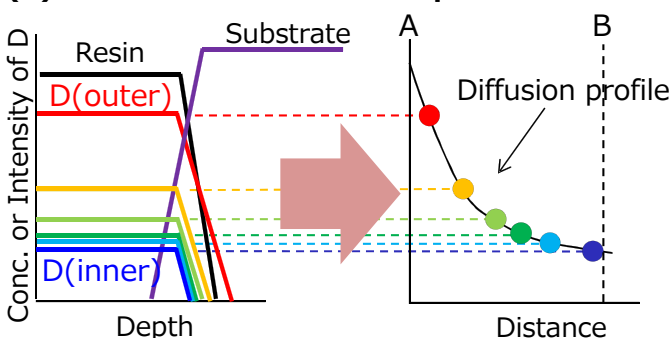
(1) D_2O humidification test



(2) Unsealing & D-SIMS line profiling



(3) Conversion to diffusion profile



Diffusion of water to the inner side of resin was observed in line profile. Barrier property shows the curing time dependence.