

## Pichler Karl (ITC)

**From:** Pichler Karl (ITC)  
**Sent:** Thursday, February 08, 2001 4:28 PM  
**To:** Frischknecht Kyle (ITC)  
**Cc:** Proulx George (ITC); Pakbaz Hash (ITC)  
**Subject:** RE: Meeting with Dr. John Affinito

Hi Kyle,

YES, I believe there may be a combination technique with spin-coating that I believe should work (also discussed at FED and I have been considering filing a patent for a long time - lack of time). Spin-, roll- or whatever-coat, cross-link/cure and then sputter the dielectric barrier through a mask over the OLED area only, i.e. leave the contact pads, scribe lines, etc. free from the barrier and then stick the whole thing in, for example, a plasma asher and **ash-off the organic where there is no dielectric barrier film**. I have a patent from CDT-time (for a completely different purpose) that shows that just a few (say around 10 or more Angstroms) of good sputtered dielectric (e.g. AlOx) act as a perfectly good oxygen plasma ash barrier. Alternatively, I have been thinking if we could deposit the organic liquid layer (via flash-evaporation, spin- or roll-coat or whatever) and then do the **UV cross-linking through a mask**. The idea is that after this we may be able (don't know if this will work, never tried) to thermally evaporate or somehow spray/wash off the non-cross-linked molecular organic film and then sputter the dielectric also through a mask or alternatively make the contacts first and then sputter the dielectric. In addition, the non-cross-linked organic may be volatile enough so laser ablation becomes perfectly feasible - not sure. This may also have the advantage that the mask-cross-linking should provide a smooth transition from the regions with to those without the organic layer (instead of a sharper step).

These are all just 'undeveloped' ideas without really having thought through them in detail to spot serious bottlenecks and certainly I have not done any practical trials whatsoever (other than the thin oxide as ash barrier).

Just a note: the reason why I was originally thinking of spinning the layer was that this could very easily added on to e.g. a Satella via a separate spin-chamber without the need to custom-build a flash-evaporator for the organic.

I am looking forward to keep this discussion rolling.  
Charlie

-----Original Message-----

**From:** Frischknecht Kyle (ITC)  
**Sent:** Thursday, February 08, 2001 11:26 PM  
**To:** Pichler Karl (ITC)  
**Cc:** Proulx George (ITC)  
**Subject:** RE: Meeting with Dr. John Affinito

Hi Charlie:

I have also previously considered spin coating the acrylate layer; however, I haven't yet thought up a reasonable method for keeping the electrical pins free of the coating. Performing a subsequent laser ablation seems less than optimum. I anticipate that vapor deposition through a shadow mask will keep the pins free of the coating; therefore, I have been quite partial to the vapor deposition method. Also, I am not too sure if scribing through the multilayer is a good idea; therefore, I anticipate that masking the area for the scribe lines will be a good practice. Obviously, photolithography after cathode deposition (for a "lift-off" technique) doesn't look very promising. Although there will certainly be many equipment issues with PML, it very well may be that vapor deposition through a shadow mask is the easiest method for producing an array of small displays on a large plate of glass. If you are really opposed to the vapor/mask method, I guess we could consider printing techniques (Screen/Inkjet), but when you get down to the details, these methods will have their respective equipment issues as well. Any thoughts on masking for spin coating?

Kyle

-----Original Message-----

**From:** Pichler Karl (ITC)  
**Sent:** Thursday, February 08, 2001 1:28 AM  
**To:** Proulx George (ITC); 'Guenther Ewald'; Antoniadis Homer (ITC); Pakbaz Hash (ITC); Frischknecht Kyle (ITC); Larson Otto (ITC); Allemand Pierre-Marc (ITC); Cumpston Brian (ITC); 'ZT - Wittmann Georg'; 'ZT - Stoessel Matthias'  
**Subject:** RE: Meeting with Dr. John Affinito

Hi all,

Just a small and CONFIDENTIAL point to be aware of in the future should we need it: While working with PML encapsulation at FED (eMagin) I and others there discussed and stressed that LML, i.e. spinning in inert conditions a carefully outgassed cross-linkable solution onto the 8" wafers with subsequent cross-linking and barrier layer sputtering should be perfectly feasible and avoid many equipment issues with PML. I do not know if this was actually tried there after I left and/or if a patent was filed. These discussions happened probably from around mid 1999 onwards.

Charlie

-----Original Message-----