

SCINTILLATOR BAKEOUT FOR UHV APPLICATIONS

Scintillator Bakeout Information – P47, YAG and YAP

In many applications, P47, YAG and YAP scintillators can be put in place and used right from the packaged product. But in cases that are dealing with ultrahigh vacuum (UHV), a bakeout process is sometimes suggested. The following information may be helpful in such a process.

P47 Powder Scintillators:

This is a three part system, made up of the glass substrate, the P47 phosphor and a proprietary polymeric binder for bonding the phosphor powder to the glass surface. The polymer itself can be baked out as high as 400°C.

YAG and YAP:

Certainly both YAG and YAP can indeed be baked out, and we also know that even at 400°C, we cannot detect any change in the doping of the Ce^{+++} within the single crystal. However, for most SEM applications, at least, these single crystals are aluminum coated and once one takes the scintillator above 100°C, in most environments, at least, the aluminum layer starts to oxidize. Hence we do not recommend baking at higher temperatures unless you can be absolutely certain that there is complete absence of oxygen. Otherwise the aluminum coating will be oxidized, the now oxidized coating will have to be removed and a new one applied (by vacuum evaporation).