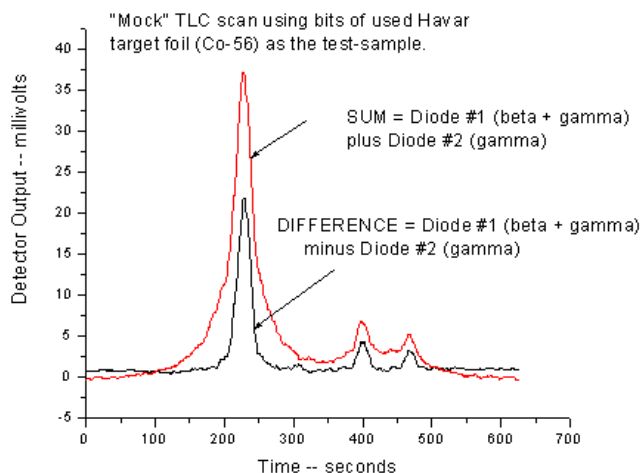


OMNI-RAD® Detector for thin-layer chromatography

This versatile, PIN-diode-based module is used for scanning TLC plates which have been 'spotted' with compounds labeled with commonly-used medical and research isotopes, including low-energy gamma emitters, positron-emitters, or beta (-) emitters.

Beta Detection: In beta (or positron) mode the detector module utilizes anti-parallel (opposed-polarity), back-to-back, 1 sq. cm. PIN-diodes mounted behind a 3mm wide slit in a 1/4" thick lead plate centered over the scanning bed. The diode which is closest to the TLC plate responds to both beta's and gamma's emitted from the sample; the second diode, which is "shadowed" by the first diode, responds only to gamma's. By electronically subtracting the second (gamma) signal from the first (beta plus gamma) signal, we have a composite detector which, in effect, responds to beta's only, providing excellent spatial resolution for beta⁺ (positron) or beta⁻

emitters, but without the need for bulky lead shielding -- even in the presence of an intense gamma background. The effectiveness of the concept is illustrated in the 'Mock' TLC scan, where the sample under test (⁵⁶Co) emits both positrons ($E_{\max} = 1.459$ MeV) as well as intensely penetrating gamma rays (846, 1240, 1760, 2600 KeV, 3260 KeV and others).



Gamma Detection: In gamma detection mode, the signals from the two detector diodes are summed instead of subtracted. Spatial resolution for low-energy gamma-emitters (~140 KeV max.) is provided by the 3 mm wide slot cut in the 1/4" thick lead bottom plate.

