

## Mammography X-ray Spectra Across a 2-D Field Derived from Transmission Measurements

Transmission measurements using high purity aluminum were made at different locations across an x-ray mammography field. X-ray spectra were derived from the transmission measurements using a variational principle method. This method involved matching the calculated transmission curve from the derived spectrum with the measured transmission curve. The spectra were derived in units of exposure per keV interval to match the transmission curve which was measured in units of exposure. The variational method was validated using published mammography spectra to calculate a transmission curve and then deriving the x-ray spectrum from the calculated transmission curve. The beam hardening due to higher attenuation along the anode side is also demonstrated by the derived spectra. The effective photon energy for the spectra weighted by exposure varied by five percent from the softest to hardest x-ray spectra.