

AbstractID: 14519 Title: Evolutionary Trends in Indirect Detection X-ray Imager Technology Punctuated by Adaptive Innovation: From Active Matrix Flat-Panel Imagers to Single-Photon-Counting Area Detectors

From initial conception in the 1980's to widespread clinical implementation over the last decade, active matrix, flat-panel imagers (AMFPIs) have ridden an incredible technological wave associated with the thin-film electronics used in active matrix, liquid crystal displays. Despite the many benefits and advantages of contemporary AMFPIs, constraints imposed by their physical construction, performance and cost encourage further innovation. Some possible sources for such innovation originate from recent developments in thin-film electronics driven by the display industry's need for ever-larger area, brighter, less expensive, less power-hungry, and flexible devices. In this presentation, the design and limitations of AMFPIs will be reviewed, a variety of conceivable technological directions for overcoming these limitations will be presented, and the potential capabilities of future x-ray imagers will be discussed.

Learning Objectives:

1. Understand the basic principles, as well as the fundamental limits, of present-day active matrix, flat-panel x-ray imagers
2. Understand the possible evolution of imager development
3. Understand the potential capabilities of future imagers