

## ABSTRACT

Digital radiography offers the potential of improved image quality as well as opportunities for advances in medical image management, computer-aided diagnosis, teleradiology and image-guided therapy. Image quality is highly dependent upon the performance of the x-ray detector in precisely and accurately acquiring information from the x-ray beam transmitted by the patient. The type of detector that is most suitable for digital radiography will vary according to the imaging requirements of the specific radiological procedure. Important considerations are spatial resolution, uniformity of response, contrast sensitivity, dynamic range, acquisition speed and frame rate. In this presentation, the underlying physical factors defining the performance of x-ray detectors for digital radiography will be reviewed and specific detector technologies will be considered. These include technologies that can be employed for full-area detectors and also those which may be more practical for scanning x-ray systems. Various approaches based on phosphor x-ray converters, where light quanta are produced as an intermediate stage, will be described. Recent developments in direct x-ray-to-charge conversion materials such as zinc cadmium telluride, lead or mercuric iodide, and amorphous selenium will also be discussed.

### Educational Objectives:

1. to familiarize the attendee with important physical properties of x-ray detectors for digital radiography.
2. To discuss dependence of technical requirements on clinical imaging task
3. to describe the current state of the art direct and indirect conversion detector technology