

## **ADVANCES IN CCD IMAGING TECHNOLOGIES**

Anna Andonova<sup>1</sup>, Hristo Lukarski<sup>2</sup>

<sup>1</sup>*Technical University of Sofia, FETT, 8 Kl. Ohridski blvd., 1779 Sofia,*

<sup>2</sup>*Space Research Institute, BAS, 6 Moskovska Str., 1000 Sofia*

All of more than hundred CCD architectures were manufactured for CCD operation optimized for the visible and near infrared, ultraviolet, or soft x-ray. The goals in developing new CCDs are essential two-fold: to enable new science, and to significantly improve the quality and quantity of data for all types of science. The primary principles CCD operations as charge generation, charge collection, charge transfer and charge detection of modern (HCCD, ICCD, OECCD, L3CCD) CCDs are compared together. Choosing the correct detector for an application requires the basic device parameters involved. In the paper are examined the electrical performance of the advanced CCD imager as standard, front-illuminated and back-illuminated. The specific metrics of various types CCD for scientific application are analyzed. The both advantages and disadvantages of new UV coating are considered. The main characteristics comparison for Frame transfer, Interline and Full frame CCDs are accomplished. The three primary sources of noise in different up to date CCDs as photon noise, preamplifier noise and dark current noise are analyzed.