

Spectrophotometer using CCD detector



Overview

A CCD spectrometer is a spectrometer that uses a charge-coupled device detector to convert dispersed light into measurable electrical signals. In simple terms, the optical system spreads light by wavelength, and the CCD array records the intensity of each wavelength channel. It is widely used in chemical analysis, light source testing, fluorescence measurement, material inspection, color analysis. Spectroscopy detectors rely on photons hitting matter and creating signals we can measure. It is divided up into a large number of light-sensitive small areas known as pixels, which can be used to assemble an image of the area of interest. A CCD is a silicon-based multi-channel array detector of UV, visible and. CCDs represented a revolutionary step forward in detecting at UV to near-IR wavelengths, particularly for spectroscopy. The purpose of this document is to help you to select the most appropriate options for your application. Virtually all spectroscopy between 200 nm and 1100 nm is performed.



Article Content

Feb 16, 2026

CCD Spectrometer Working Principle and Selection Guide

Learn how a CCD spectrometer works, including slit, grating, CCD detector, wavelength calibration, resolution,

Feb 09, 2026

Should I choose a Diode Array, CCD or Scanning Spectrophotometer ...

Every OLIS spectrophotometry built from scratch here in Athens, Georgia, employs a scanning monochromator and highest

Nov 21, 2025

Linear Linear CCD-Based CCD-Based Spectrometry Spectrometry Using Using ...

Abstract At room temperature, high-responsivity charge-coupled devices (CCD) comprising arrays of several thousand linear

Jan 17, 2026

Choosing the right detector: CCD vs CMOS vs NMOS

Compare CCD, CMOS, and NMOS detectors used in Ibsen's OEM spectrometers to find the best fit for

May 12, 2026

Theoretical and experimental analysis of circularly polarized ...

The authors present an artifact-free circularly polarized luminescence spectrophotometer using a single camera and

May 26, 2026

Selecting a CCD Camera for Spectroscopic Applications

Spectroscopic Charge Coupled Device (CCD) detection systems are available with a wide range of sensors and cooling options. The

Nov 26, 2025

Detectors of Light

Introduction Parameters that Characterize Good Detectors Spectral Bandwidth Quantum Efficiency Spectral Response Noise and

Sep 18, 2025

What is a CCD Detector?

What is a CCD detector? A CCD or Charge Coupled Device is a highly sensitive photon detector. It is divided up into a large number

Jan 26, 2026

Detectors for Raman Spectroscopy: CCDs, EMCCDs, and InGaAs

Unsure whether a CCD, EMCCD, or InGaAs detector is best for your Raman application? In this Spectral School

Aug 26, 2025

Choosing a Scientific CCD Detector for Spectroscopy

Most scientific spectroscopy applications use two-dimensional full-frame CCD detectors that are photosensitive across the full active

May 20, 2026

CCD Spectrophotometer / Fluorometer

UV spectrophotometer models use windowless CCD to increase the UV sensitivity down to 200nm. It helps

Dec 24, 2025

CCD and CID solid-state detectors

Following the introduction of the first CCD and CID detectors for use in ICP-OES, there has been much debate over the advantages

Sep 28, 2025

SI Photonics CCD Detection in Spectroscopy

The CCD imagers used in the 400 Series Spectrophotometers are high performance linear arrays allowing

Dec 17, 2025

Linear CCD-Based Spectrometry Using Either an ASIC or FPGA

We begin by discussing the design methodologies that might be considered when designing a spectrometer for

Mar 28, 2026

Detector Technologies for Spectroscopes: CCDs, CMOS Sensors

Spectroscopy really hinges on how well we can detect light, and the sensor you pick makes a huge difference in

Jan 10, 2026

1.3C: Detectors

Expand/collapse global hierarchy Home Bookshelves Analytical Chemistry Molecular and Atomic Spectroscopy (Wenzel) 1: General

Mar 22, 2026

Learn optical detection basics for spectrometry

Discover the fundamentals of optical detection, including photo-diodes and CCD arrays. Essential for understanding spectroscopy

Sep 30, 2025

CCD Detectors for Spectroscopy and Scientific

TE and cryogenically cooled CCD and EMCCD scientific cameras for ultra sensitivity from 200 nm to 1100

Jun 10, 2026

Comparing the performance of EM-CCD and CCD cameras for Raman ...

Introduction EM-CCD (electron multiplied charge-coupled device) and CCD (charge-coupled device) cameras are the most common

Oct 19, 2025

Charge-coupled device

Charge-coupled device A specially developed CCD in a wire-bonded package used for ultraviolet imaging A charge-coupled device

Nov 25, 2025

Detectors used in array spectrophotometer | PPTX

The document discusses array detectors used in spectroscopy. It describes photodiode array detectors and charged coupled device

Jul 08, 2026

Optical Spectrometer using a Linear CCD image sensor

This practical implementation of an optical spectrometer consists of a linear Charge Coupled Device image sensor, the TCD1304AP

May 20, 2026

SI Photonics CCD Detection in Spectroscopy

CCD detectors have revolutionized the field of spectroscopy and have become the detector of choice for UV/Vis, Emission

Mar 17, 2026

Spectroscopy: The Detector

In an array with multiple rows, such as a CCD detector array, each column captures a small range of wavelengths from the grating.

Jan 06, 2026

Linear CCD-Based Spectrometry Using Either an ASIC or FPGA

We report on the implementation of a FPGA-based ultra-violet (UV), infra-red (IR) visible (Vis) CCD spectrometer

Oct 19, 2025

What is a CCD Detector?

A CCD is a silicon-based multi-channel array detector of UV, visible and near-infra light. These are used

Jan 29, 2026

Detector Technologies for Spectroscopes: CCDs, CMOS Sensors

It helps to know how these detectors work, where each one performs best, and what you're giving up when you pick

Sep 26, 2025

(PDF) CCD detectors for molecular absorption ...

The performance of CCD detectors for fluorescence measurements is evaluated through uncertainty studies, mainly as

Apr 30, 2026

CCD Spectrometer for UV-Vis, Fluorescence & Lab

A CCD spectrometer is a spectroscopic instrument that uses a charge-coupled device detector to measure

Feb 15, 2026

Excitation-Emission Spectroscopy with CCDs and Array Detectors

The acquisition time of such excitation-emission maps (EEM) can be significantly reduced by using Charge Coupled Device (CCD)

Jul 07, 2026

Introduction to Charge-Coupled Devices (CCDs)

The digital camera, incorporating a charge-coupled device (CCD) detector, is by far the most common image capture mechanism

Apr 03, 2026

ALN-Prevatt-July04-layout

The CCD array spectrophotometer of today represents the technological maturation of traditional UV-VIS spectroscopy. These

Jan 06, 2026

Improving Optical Measurements: Non-Linearity

Charge-coupled device (CCD) spectrometers are widely used as detectors in analytical

May 27, 2026

What is a CCD spectrometer?

CCD Spectrometer Components and Design Breakdown of Key Components A CCD spectrometer

Contact Us

For more information, pricing, or custom solutions, please contact us:

Website: <https://ntmmgroup.co.za>

Email: sales@ntmmgroup.co.za

Phone: +27 82 471 2596

Address: Unit 7, Optic Park, 24 High-Tech Lane, Century City, Cape Town, 7441, South Africa

This document is for informational purposes only. Specifications subject to change without notice.

