SCANNING ELECTRON MICROSCOPE (SEM)

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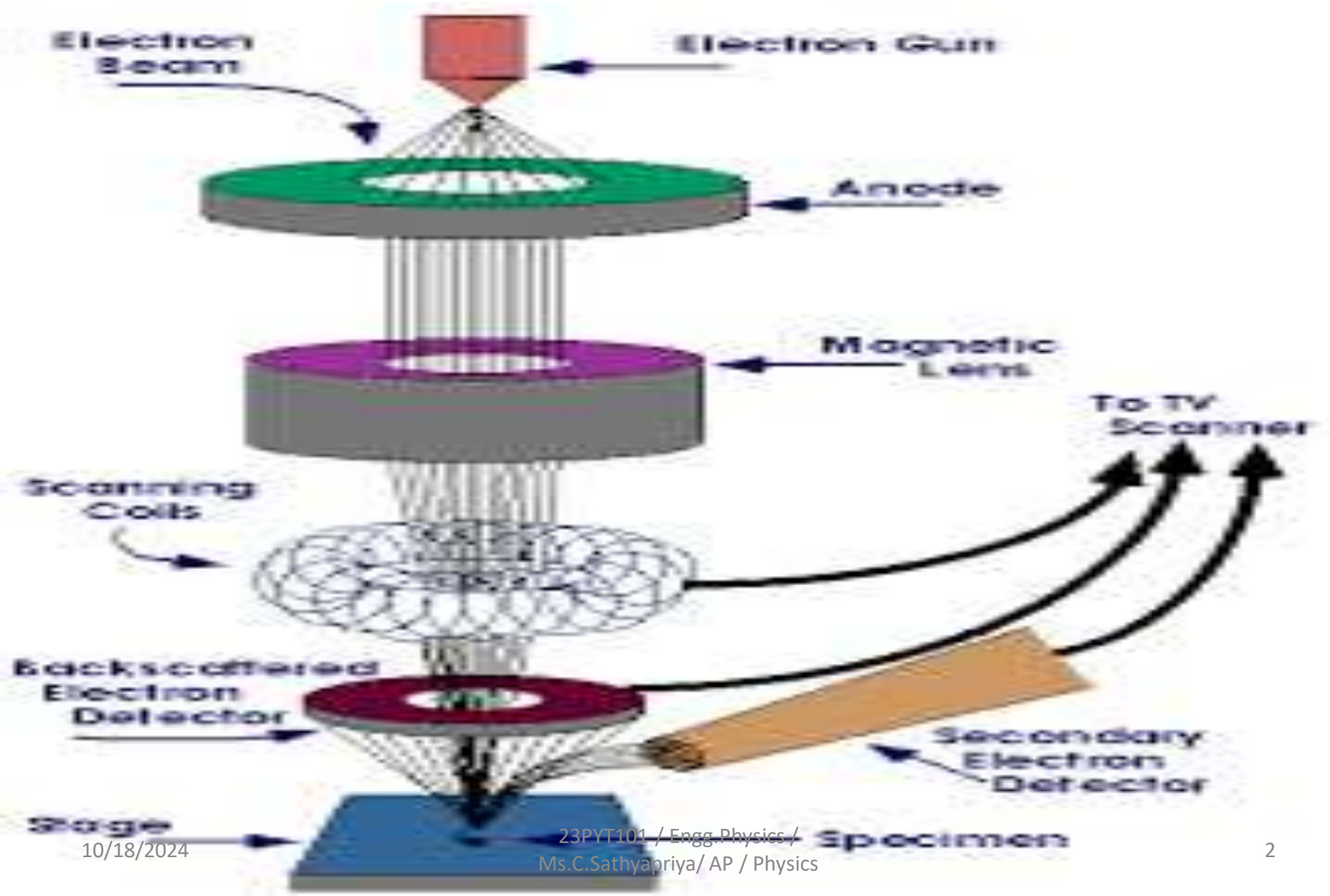

SCANNING ELECTRON MICROSCOPE (SEM)

Principle:

- Accelerated primary electrons are made to strike the object.

  The secondary electrons emitted from the objects are collected by the detector to give the three dimensional image of the object.

Construction:

1. Electron gun:

- This produces a high energy electron beam by thermionic emission
- These electrons are accelerated by the anode towards the specimen.

2. Magnetic condensing lens:

- These are coils carrying current.
- The beam of electrons can be made to converge or diverge.
- The focal length can be adjusted by varying the current in the coils
- The electron beam can be focused to a fine point on the specimen.

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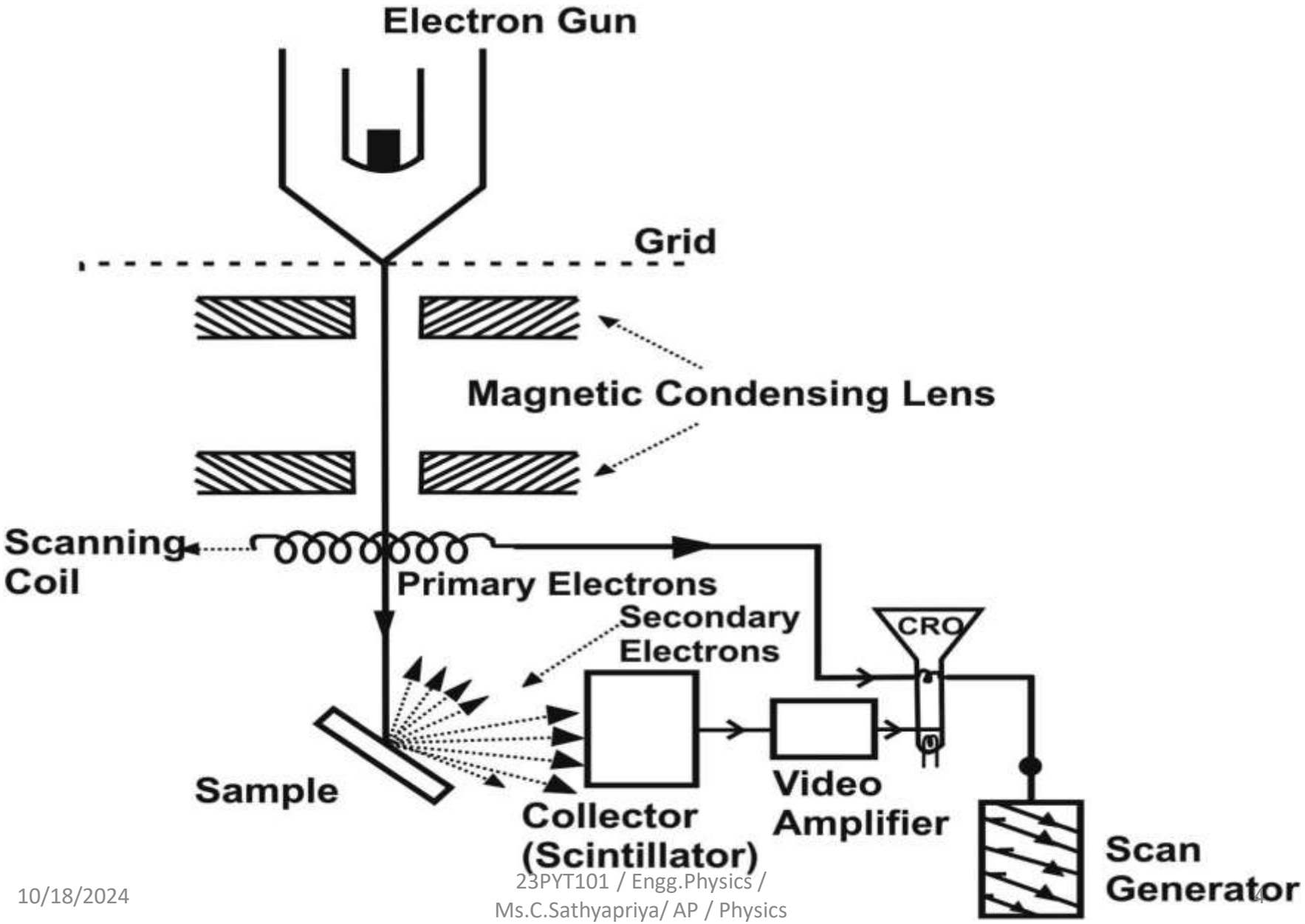

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3. Scanning coil:

- This coil is placed between the condensing lens and the specimen.
- This is energized by a varying voltage.
- This produces a time varying magnetic field.
- This field deflects the beam and the specimen can be scanned point by point.

4. Scintillator:

- This collects secondary electrons and converts into light signal.

5. Photomultiplier:

- The light signal is further amplified by photomultiplier.

6.CRO:

- Cathode ray oscilloscope produces the final image.