





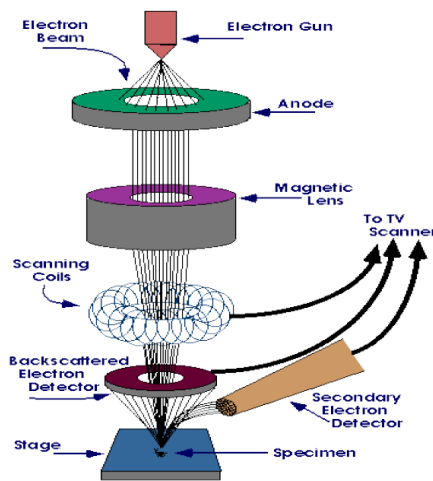


**(G). Microstructure Analysis Using SEM**

The SEM technique performed twice to analyse the microstructure changes in the Al-Si-Mg alloy before and after heat treatment of casted samples produced by sand casting technique.

The key microstructural features obtained by SEM which control the properties of aluminium alloys are:-

- i. Coarse inter-metallic compounds which form during ingot cooling or during subsequent processing. These particles are often aligned as stringers in fabricated products [9].
- ii. The submicron size particle referred to as dispersions, the transition metals like chromium, manganese, and zirconium or other high melting point elements contains intermetallic compound.
- iii. which are the inter-metallic compounds containing transition metals like chromium, manganese, and zirconium or other high melting point elements.



**Fig.1 SEM working [8]**

- iv. The size and shape of grains.
- v. The interruption in substructure resulting from cold working.
- vi. Fine Precipitates, which form during precipitation hardening or age hardening, heat treatments and which results or enhance strengthening.

**IV. CONCLUSION**

From this study, the mechanical properties of aluminium alloy can be change by changing different casting parameters during the production with the sand casting method. The following general conclusions were drawn:-

1. The change in microstructure and hardness of the casted aluminium alloy produced after and before heat treatment can be compare.
2. The change in casting parametres with their diefferent levels may also give defect free castings.

As after heat treatment, the alloy may attains tempered state and hardness is achieved through the precipitation of inter metallic phases during ageing which leads to increase in hardness and refinement of grain structure.

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