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A Brief Note on Metallurgy

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Editorial

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DESCRIPTION

Metallurgy is a branch of materials science and engineering that investigates the physical and chemical properties of metallic elements, intermetallic compounds, and alloys. Metallurgy involves both the science and technology of metals, i.e., how science is applied to the manufacturing of metals and the engineering of metal components utilised in consumer and industrial products. Metalworking and metallurgy is not the same thing. Metalworking, like medicine, relies on metallurgy to grow technologically. A metallurgist is a metallurgist who specializes in the field.

Chemical and physical metallurgy are two subsets of metallurgy. Chemical metallurgy focuses on the metal reduction and oxidation, as well as metal chemical performance. Mineral processing, metal extraction, thermodynamics, electrochemistry, and chemical degradation are all aspects of chemical metallurgy that can be studied. Physical metallurgy, on the other hand, is concerned with metals' mechanical qualities, as well as their physical attributes and physical performance. Crystallography, material characterization, mechanical metallurgy, phase transitions, and failure causes are only a few of the topics researched in physical metallurgy.

The method of extracting valuable metals from an ore and refining the retrieved raw metals into a purer form is known as extractive metallurgy. The ore must be reduced physically, chemically, or electrolytically to convert a metal oxide or sulphide to a purer metal. Extractive metallurgists are interested in three primary streams: feed, concentrate (metal oxide/sulphide) and tailings (waste). After mining, big chunks of ore feed are crushed or ground into minute particles, with each particle containing either mostly valuable or mostly waste material.

The needed metal can be extracted from waste products by concentrating the valuable particles in a condition that allows for separation [1]. Metallurgists use metallography, a technique established by Henry Clifton Sorby, to examine the microscopic and macroscopic structure of metals [2]. An alloy of interest is ground flat and polished to mirror sheen in metallography. After that, the sample can be etched to disclose the metal's microstructure and macrostructure. After that, the sample is studied under an optical or electron microscope, where the image contrast reveals information on the composition, mechanical properties, and processing history [3]. Crystallography, which commonly involves x-ray or electron diffraction, is another useful tool for modern metallurgists. Crystallography exposes the crystal structure of a sample and aids for the identification of unknown materials [4].

As part of an interdisciplinary team with material scientists and other engineers, modern metallurgists work in both developing and conventional domains [5]. Mineral processing, metal production, heat treatment, failure analysis, and metal joining are some of the more traditional topics. Nanotechnology, superconductors, composites, biological materials, electronic materials, and surface engineering are all emerging fields for metallurgists [6]. The blast furnace, cast iron, hydraulic-powered trip hammers, and double acting piston bellows were all invented in ancient China, as were many other uses, methods, and technologies related to or involved in metallurgy [7].Web development is the process of creating a web application. People use these apps *via* internet browsers on different devices. This is different from mobile apps that run on mobile phones and tablets and do not necessarily require an internet connection to run [8]. Web development is a general term that includes both front-end development and back-end development. Professionals can also be full-stack web developers.

Web development is a work related to the development of a World Wide Web or Intranet (private network) website. Web development is a range of simple, single static side's development of plain text on complex web applications, electronic companies, and social network services [9]. A more comprehensive list of tasks that refer to web development include web engineering, web design, web content development, client connection, client ID / serveride script, web server, and network security configuration, and electronic commerce development . Under Web Specialists, Web Development usually points to the main non-emergency aspect of websites. For large organizations and companies, the web development team consists of hundreds of people (web developers) and follows the standard ways such as agile methods while developing a website. Smaller organizations require a secondary assignment to a single permanent or contract developer or related work as a graphic designer or an information system engineer. Web development can be collaboration between departments rather than a domain in a particular department. There are three areas of expertise for web developers: front-end developers, back-end developers, and full-stack developers. The front-end developer is responsible for the actions and graphics performed in the user's browser, and the back-end developer manages the server. Web Content Development is the process of investigating, creating, collecting, organizing, and editing information for publication on a website. Website content may consist of prose, graphics, images, recordings, films, or other digital assets that can be distributed from a hypertext transfer protocol server and viewed in a web browser [10].

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