

History of Chemistry in ancient and Medieval India (02 credit)

Course objective: Main objective is to highlight the development of chemistry and alchemy in ancient India.

Course Outcome: After completion of this course successfully, the students would be able to

1. understand application of science & technology in ancient Indian civilization
2. get insight of Indian Contribution to World in Chemistry
3. correlate ancient health management systems through home remedies
4. apply concepts of Indology of chemistry to biomolecules and functions of drugs inside the body.

Preamble: Ancient India, an important role in the development of chemistry was made by Ayurveda which used a variety of minerals. Science and technology in ancient and medieval India covered all the major branches of human knowledge and activities. In any, early civilization, metallurgy has remained an activity central to all civilizations from the Bronze Age and the Iron Age, to all other civilizations that followed. The Indus valley civilization was the earliest society, the story of early chemistry in India begins from here. Traces of cement had been found in the era of Mohanjodaro. According to RigVeda, tanning of leather and dyeing of cotton was practiced during this period. After Vedas classical texts which give valuable information about the chemical activities of this period. The major chemical products of this period were glass, paper, soap, dyeing, cosmetics and perfumes, alcoholic lacquers, pharmaceuticals, gun powder and saltpetre. Nagarjuna (metallurgist) and Kanada were chemist of ancient period. Indian and Persian army used arrows tipped with iron. In the Gupta age metallurgical operations were found. Nataraja statue the god of dance is made of five metals Pancha Dhatu and Iron Pillar, Delhi is as a silent witness to assert the striking metallurgical skill of the Hindus. Paintings found on walls of Ajanta and Ellora also testify to the high level of chemical science achieved in ancient India

Contents:

1. Chemistry in Prehistoric India: Pre-Harappan Period and Indus Valley Civilization
2. Chemistry in Vedic and Ayurvedic Period
3. Chemistry in Translational Period
4. Chemistry in Iatrochemical Period
5. Chemistry in Practical Art

References:

1. History of chemistry in ancient and medieval India / [edited by Priyadarajan Ray] ; incorporating the 'History of Hindu chemistry' by Acharya Prafulla Chandra Rây. Praphulla Candra Ray; Priyadarajana Ray, 2004, : Chowkhamba Krishnadas Academy Varanasi.
2. Subbarayappa, B.V. 1999. Indian Alchemy: its Origin and Ramifications. In *Chemistry and Chemical Techniques in India* (Ed.) Subbarayappa, B.V., Delhi: Centre for Studies in Civilisations.
3. Deshpande, Vijaya Jayant. 1998. History of Chemistry and Alchemy in India from Pre-historic to Pre- Modern Times. In *History of Indian Science and Technology an Culture AD 1000-1800* (Ed) A. Rahman. Delhi: Oxford.
4. Habib, Irfan. 2000. Joseph Needham and The History of Indian Technology. *Indian Journal of History of Science* 35(3): 245-274.
5. Needham, Joseph. *Science and Civilisation in China*. Vols. IV (2), V(4). Cambridge: Cambridge University Press. (Especially pages 85-6,97,104-7 and 131-2).
6. Ray, P.C. 1909. *History of Hindu Chemistry*. Vols. I & II. London: Williams and Norgate
7. Useful weblinks:

Useful Weblinks:

<https://nptel.ac.in/courses/101104065>

https://www.infinityfoundation.com/mandala/t_es/t_es_agraw_chemistry_frameset.htm

<https://www.pgurus.com/chemistry-in-ancient-india/>