Wilhelm Conrad Roentgen And The Discovery Of X-Ray Beams

Discovery of X-ray Beams

The frequency of X-rays is higher than the frequency of ultraviolet light but less than that of a gamma ray. X-rays are extensively used in medicine and industry to produce images of internal structures because they are absorbed by many forms of matter, including body tissues.

X-radiation (x-ray) is a form of electromagnetic radiations which are emitted when matter is bombarded with fast electrons. They have extremely short wavelength and high frequency with wavelengths ranging from about 10\(^{-8}\) to 10\(^{-12}\) meter and corresponding frequencies from about 10\(^{16}\) to 10\(^{20}\) hertz. The wavelength of X-rays is significantly shorter than that of visible light and is in the range of about 0.0001 to 10 Angstroms.

Wilhelm Roentgen was already working on the effects of cathode rays during 1895, before he actually discovered X-rays. His experiments involved the passing of electric current through discharge tubes of random thickness placed in the path of the rays. He generated the very first rays in 1895 by using a Crookes tube and a barium platinocyanide coated screen. The screen became fluorescent even though it was placed in the path of the cathode rays on material objects.

The first person who discovered and systematically studied X-rays was Wilhelm Roentgen. His experiments involved the passing of electric current through discharge tubes and resulted in the emission of rays which illuminated a barium platinocyanide screen. Based on his subsequent research and experiments, he declared that X-ray beams are produced by the impact of fast electrons. X-rays are a form of electromagnetic radiations which are emitted when matter is bombarded with fast electrons. They have extremely short wavelength and high frequency with wavelengths ranging from about 10\(^{-8}\) to 10\(^{-12}\) meter and corresponding frequencies from about 10\(^{16}\) to 10\(^{20}\) hertz.

Wilhelm Roentgen died on February 10, 1923 in Munich at the age of 77. His discovery revolutionized the entire medical profession and set foundation for diagnostic radiology. In 1901, Roentgen received the first ever Nobel Prize in Physics. This was a true acknowledgement of his remarkable discovery which was going to be highly beneficial for mankind in the coming years.

Historically, several prominent people were involved in the research and study of X-rays. The following table lists some of the important people who have been involved in the research and study of X-rays:

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<thead>
<tr>
<th>Year</th>
<th>Position</th>
<th>Institution</th>
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<tbody>
<tr>
<td>1879</td>
<td>Chair of Physics</td>
<td>University of Giessen</td>
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<tr>
<td>1888</td>
<td>Chair of Physics</td>
<td>University of Wurzburg</td>
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<td>1900</td>
<td>Chair of Physics</td>
<td>University of Munich</td>
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Fernando Sanford, an American physicist, generated and detected X-rays in vacuum tubes. Philipp Lenard, a German physicist, won the Nobel Prize for Physics for discovering many properties of the cathode rays. Wilhelm Röntgen, a German physicist, was the first person who discovered and systematically studied X-rays. Thomas Edison, an American inventor, examined calcium tungstate against X-rays and developed medically effective fluoroscope.

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