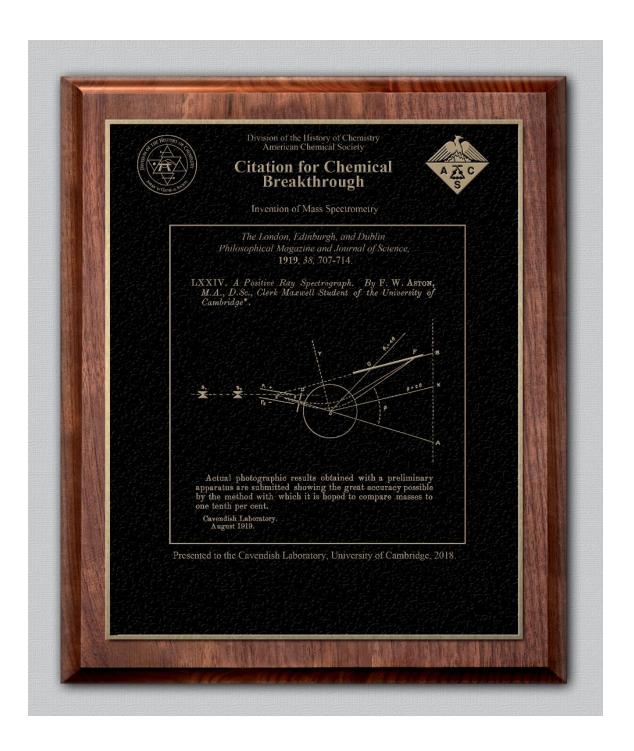
## Aston's Positive Ray Spectrograph - Chemistry Breakthrough Award

## Malcolm Longair

It is a great pleasure to report that the Laboratory was selected to receive one of 2018 **Chemical Breakthrough awards** of Division of the History of Chemistry of the American Chemical Society (ACS). This award programme honours publications, patents and books that have made breakthroughs in chemistry and the molecular sciences that have been revolutionary in concept, broad in scope, and long-term in impact.

The award cites Francis Aston's 1919 paper "A positive ray spectrograph," *Philosophical Magazine*, 38, 707-714 (1919) as a major breakthrough in the technology for measuring accurate masses of atomic nuclei. Earlier in 1912, JJ Thomson and Aston had used a prototype version of the positive ray tube to discover the non-radioactive isotopes of neon, <sup>20</sup>Ne and <sup>22</sup>Ne. Aston set about a major programme of the precise measurement of the masses of atomic nuclei through a series of three mass spectrographs, the ultimate third version having a mass resolution of about one part in 100,000.



The plaque was unveiled during in the Annual Winton Symposium on November 1, 2018, with Dr. Peter Morris, historian of chemistry and member of the Division of History of Chemistry of the ACS, representing the Society. The plaque is now on display in the Cavendish Collection of Scientific Instruments, next to the cabinet which includes both the Thomson and Aston 1912 positive ray apparatus and Aston's third mass spectrograph of 1938.

We are most grateful to the ACS for this award which symbolises the remarkable symbiosis between physics and chemistry in current frontier areas of research.



Left to right: Malcolm Longair, Andy Parker, Peter Morris and Richard Friend following the unveiling of the plaque.



The plaque in place in the Cavendish collection of scientific instruments. In the display case to the right of the photograph are Thomson and Aston's positive ray tube (top shelf) and Aston's 3<sup>rd</sup> mass spectrograph (bottom shelf).