Alta Cyclotron Services

A University of Birmingham business

Producing ^{81}Rb using the University of Birmingham MC40 Cyclotron

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The MC40 cyclotron

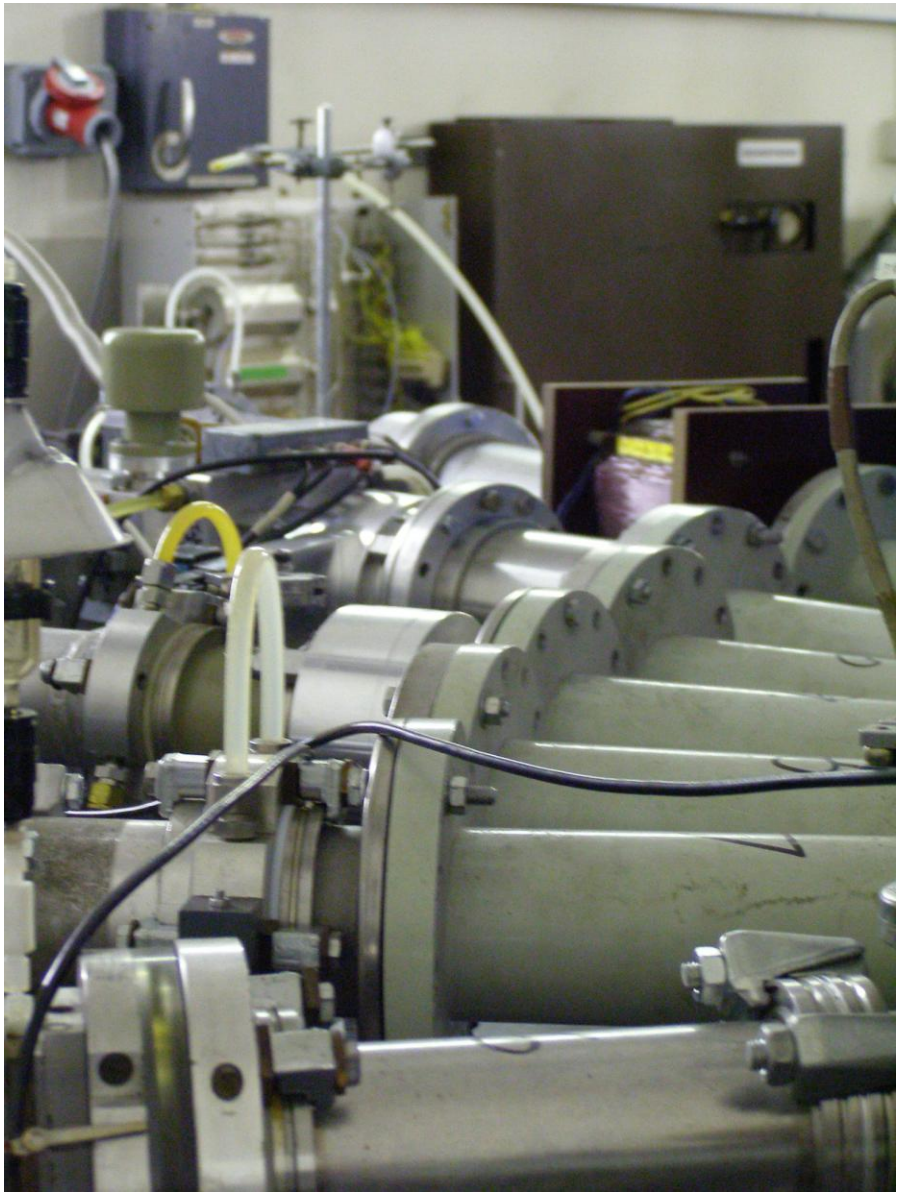
is the third cyclotron to be operated at the University of Birmingham

In 2002-2004 transferred from Minneapolis

p 11-39 MeV and < 9 MeV
d 5.5-19.5 MeV
α 11-39 MeV
^{3}He 33-54 MeV and < 27 MeV

to Birmingham

In 2005 we added a 12-way switching magnet (blue)



This provides 12 independent target positions

Two of these are dedicated to ^{81}Rb production

^{81}Rb production

Using the technique developed at MRC Cyclotron Unit (Hammersmith):

- Irradiate target containing ^{82}Kr gas (6 bar pressure) with 29 MeV protons (30μA)
- ^{81}Rb is produced and deposits on walls of target
- At end of irradiation, recover ^{82}Kr gas cryostatically
- Then elute ^{81}Rb from target: 3 x 40ml transferred to dispensing room.
- Finally evacuate target ready for reuse.

Entire procedure is controlled by PLC

Production statistics

Started ^{81}Rb production in March 2006

To end of March 2011, attempted production on 1246 days,

of which 1221 were successful (98% success rate)

In last 4 years (April 2007-March 2011) attempted production on 991 days,

of which 980 were successful (98.8% success rate)