

### **resolution (in mass spectroscopy)**

1. (energy): By analogy with the peak width definition for mass resolution, a peak showing the number of ions as a function of their translational energy should be used to give a value for the energy resolution.

2. (10 per cent valley definition): Let two peaks of equal height in a mass spectrum at masses  $m$  and  $m - \Delta m$  be separated by a valley which at its lowest point is just 10 per cent of the height of either peak. For similar peaks at a mass exceeding  $m$ , let the height of the valley at its lowest point be more (by any amount) than ten per cent of either peak height. Then the resolution (10 per cent valley definition) is  $m/\Delta m$ . It is usually a function of  $m$ . The ratio  $m/\Delta m$  should be given for a number of values of  $m$ .

3. (peak width definition): For a single peak made up of singly charged ions at mass  $m$  in a mass spectrum, the resolution may be expressed as  $m/\Delta m$ , where  $\Delta m$  is the width of the peak at a height which is a specified fraction of the maximum peak height. It is recommended that one of three values 50%, 5% or 0.5% should always be used. For an isolated symmetrical peak recorded with a system which is linear in the range between 5% and 10% levels of the peak, the 5% peak width definition is technically equivalent to the 10% valley definition. A common standard is the definition of resolution based upon  $\Delta m$  being Full Width of the peak at Half its Maximum height, sometimes abbreviated 'FWHM'. This acronym should preferably be defined the first time it is used.

1991, 63, 1554; O.B. 203