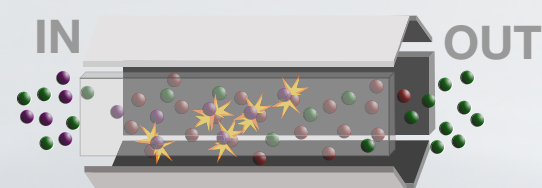


# Stop garbage in, garbage out

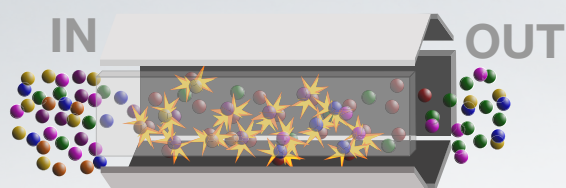
Pre-cell mass filters for multicollector ICP-MS explained

## Two types of pre-cell mass filter

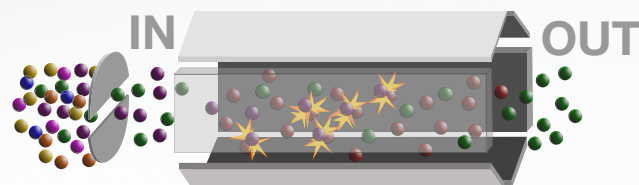
Collision/reaction cells are useful for removing isobaric interferences...



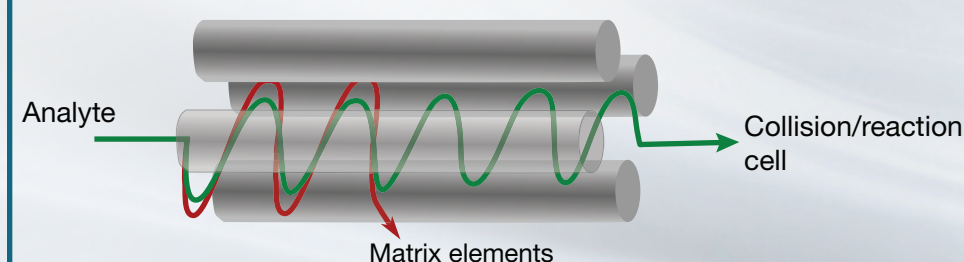
...but if you let in the entire mass spectrum you end up with a whole bunch of molecular ions caused by unwanted secondary reactions.



Pre-cell mass filters stops this “Garbage in, Garbage out” scenario by allowing only a specific mass window to enter the cell.

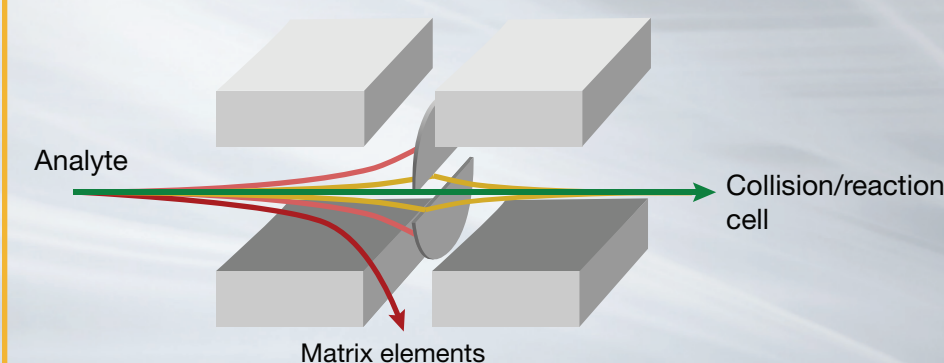


### Quadrupole filter



Patent: US 10867780B2, GB 2546060B

### Magnetic sector filter



Patent: EP 3769334B1, US 17/703899

## How do magnetic sector and quadrupole filters compare?

	Quadrupole filter	Magnetic sector filter
<b>Accuracy</b>	Non-exponential mass bias.	Exponential mass bias
	Internally normalized, exponential law corrected isotope ratios can deviate by 1000s of ppm.	Internally normalized exponential law corrected isotope ratios with MS pre-cell mass filter are accurate.
	Mass bias is not consistent between analytical sessions.	Mass bias is consistent between analytical sessions.
<b>Precision</b>	Low energy quadrupole filter results in a decrease in sensitivity.	High energy extraction — no loss of sensitivity compared to traditional MC-ICP-MS.
	Sensitivity decrease of 25-50 % compared to traditional MC-ICP-MS.	Filtering reduces space-charge effects — increasing sensitivity by up to 25%.