New column generation with built-in intelligence

A. Ueberwasser, R. Odermatt, W. Terzer

Ion Chromatography

Introduction

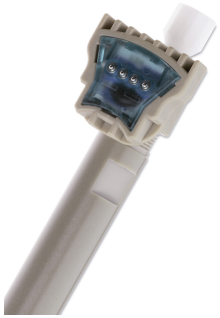
For complete traceability and GLP- and FDA-compliant monitoring, all relevant column data has to be stored after each determination. On one hand this includes invariable column data such as column name, column type, serial number, maximum allowable pressure, etc. On the other hand the stored data comprises operational data such as the number of injections performed and the record of the maximum pressure monitoring.

A unique new development – the iColumns (intelligent columns) – makes its arrival in the ion chromatography (IC) area. Together with the new 850 IC Professional instrument family and the MagIC Net™ software, Metrohm ensures complete traceability and GLP monitoring. The iColumns allow for comfortable and transparent operation, simultaneously offering the user a number of decisive advantages.

Three different types of data are stored on the iColumn, namely: freely definable data, data that is linked with the column and data that is entered by the Professional IC system and the MagIC Net™ software.

Freely definable data

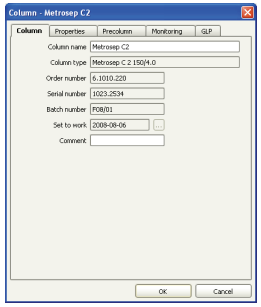
This data comprises the user-given name of the column and a comment such as the name of the application. A unique column name allows MagIC Net™ to enforce that a IC method runs only with this specific column. Any other column is rejected by the software.

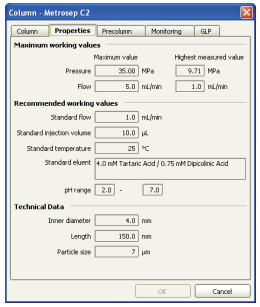


Data that is permanently linked to the column

Data of this type includes the column type (e.g. Metrosep A Supp 10 – 100) as well as the unique order and serial number. The most important technical data (column length, inner diameter and particle size) is always available.

All relevant data for running the application is stored as well. This includes standard flow, standard eluent, standard injection volume, standard temperature and pH range.

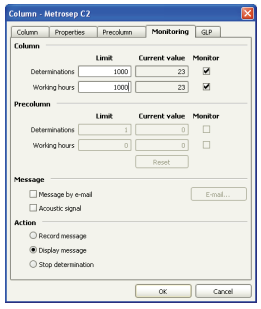


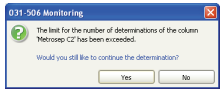


Data entered by the MagIC Net™ software

The number of injections and the operating time of each column influence the performance of the column. The monitoring data of each analysis is automatically kept up to date on the column chip. Even if the column is disconnected from the IC instrument, the stored data is not lost.

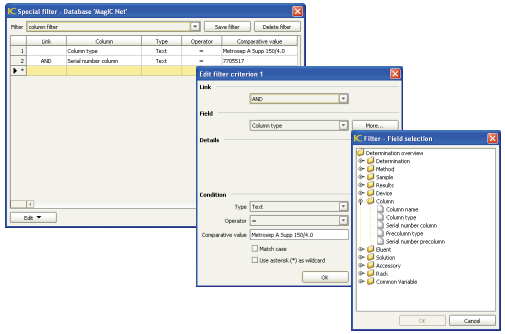
Furthermore, the user can activate the monitoring of these parameters in the MagIC Net™ software. If the column infringes a preset number of injections, the system displays an alert on the computer screen. Alternatively, an e-mail with a predefined message can be sent. The same applies for other essential column parameters such as column capacity, resolution, plate counts, etc.





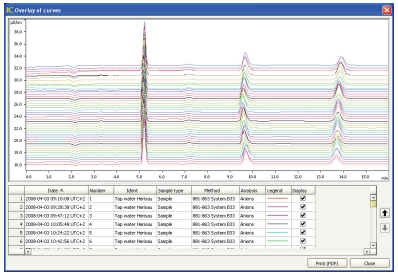
Retrieving determinations

In MagIC Net™ all determinations from different applications can be stored within the same database. Customizable search and filter tools allow to search for specific determinations. It is possible to filter according to sample data, recording date, results, instrument parameters, etc. This allows the management of even large databases without problems.



Overlay and trending column data

After applying the appropriate search criteria and filters, curve overlays of a set of analyses can be generated. This provides invaluable information concerning adverse trending effects. Another possibility is to create column control charts.



Conclusion

Metrohm`s iColumns are the worldwide first IC columns that are equipped with a data chip that stores freely definable data, fixed column data as well as data entered by the MagIC Net™ software. All relevant information such as column type, standard parameters, maximum pressure, etc. can be called up at any time.

Analysis data continuously entered by the MagIC Net™ software guarantees a complete column and GLP-compliant surveillance irrespective of the IC system in which the column is operated. The MagIC Net™ software surveys the critical column data and indicates any infringement of the limits.

Metrohm International Headquarters, CH-9101 Herisau/Switzerland, au@metrohm.com, phone +41 71 353 86 53