Formation of Large Cationized Molecules in Gas Phase

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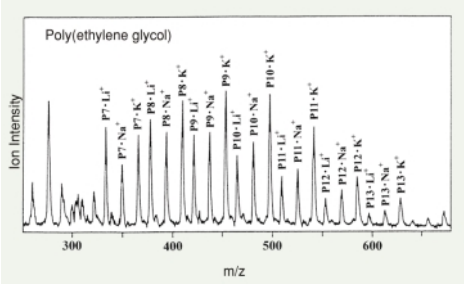
AIST Today;
Vol. 1, No. 10 (2001) 19

Recently new ionization techniques for large molecules have been introduced into the field of mass spectrometry of solid samples. However, the mechanisms of ionization are not adequately understood for the establishment of quantitative analysis. In the investigation of cationization processes of fundamental non-ionic surfactants in matrix-assisted laser desorption/ionization (MALDI) mass spectrometry, we have found that cationization efficiency of poly(ethylene glycol) oligomers depends on the kind of metal ions while poly(propylene glycol) oligomers show little dependence. This fact indicates that the chemical structure of chain is essential in the cationization process of linear molecules.



Mass spectrum of poly(ethylene glycol). Molecules of various size cationized by alkali ions (Li^+,Na^+,K^+) are observed. The symbol n denotes the number of repeating units (-CH_2CH_2O-)

Geological Survey and Geoscience

An Application of Information Technology on Marine Geosciences

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Vol. 1, No. 7 (2001) 21

The history of the earth is recorded in the marine sediments. In order to decode the history of the earth, the research results from various directions have been expressed as maps. For example, that are geological maps, resources maps, sedimentlogical maps etc. Geological Survey of Japan published a database of the marine seismic profiles around Japan in 2001, that applied the latest GIS (geographic information system) technology and the Internet technology (Fig). It is important for future information technology on marine geosciences that results of an investigation are simply added to the database by users. It is sure that the new earth view will come from the multi-dimension information analyses. We are trying to find the best way to understand the earth's history.

An example window shows an index map of seismic profiles around Japanese Islands. Each seismic profile can be searched and perused easily. Moreover, it is linked with the marine geological map, interpretation sections, etc.