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Separation and Identification of Higher Fullerenes, Using HPLC/MS

T. Ascah, Liquid Separations, Supelco, Bellefonte, PA, USA
 K. Jinno, Toyohashi University of Technology, Toyohashi, Japan

Using a SUPELCOSIL™ LC-PAH HPLC column coupled with electrospray ionization mass spectrometry, a team of investigators has separated and identified fullerenes larger than C84 (1).

The fullerenes, extracted from carbon soot, first were separated on a preparative scale column packed with monomeric octadecyl silica, from which the fullerenes elute primarily by relative molecular mass. Five batches of the fraction thought to contain the higher fullerenes were collected and concentrated, then the pooled material was separated on a SUPELCOSIL LC-PAH polymeric octadecylsilyl (ODS) column. The fullerenes eluted from this column according to shape and structure, allowing separation of many isomers of the higher fullerenes (Figure A). The existence of fullerenes up to C98, and their isomers, was confirmed by HPLC/ESI-MS.

The effects of temperature on separation of fullerenes also was examined. C82 and C84 isomers can be separated at column temperatures below 15°C, using the polymeric ODS column. According to the investigators, a 25cm x 4.6mm ID SUPELCOSIL LC-PAH column (5µm particles) provided excellent separations of the higher fullerenes.

Ordering Information:

Description	Cat. No.
SUPELCOSIL LC-PAH HPLC Column 25cm x 4.6mm ID, 5µm particles	58229
Columns of other dimensions are available – please inquire.	

Reference

1. Jinno, K., Y. Sato, H. Nagashima, and K. Itoh, *Separation and Identification of Higher Fullerenes by High Performance Liquid Chromatography Coupled with Electrospray Ionization Mass Spectrometry* (manuscript in preparation).

Reference not available from Supelco.

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Figure A. Fullerenes on a SUPELCOSIL LC-PAH Column

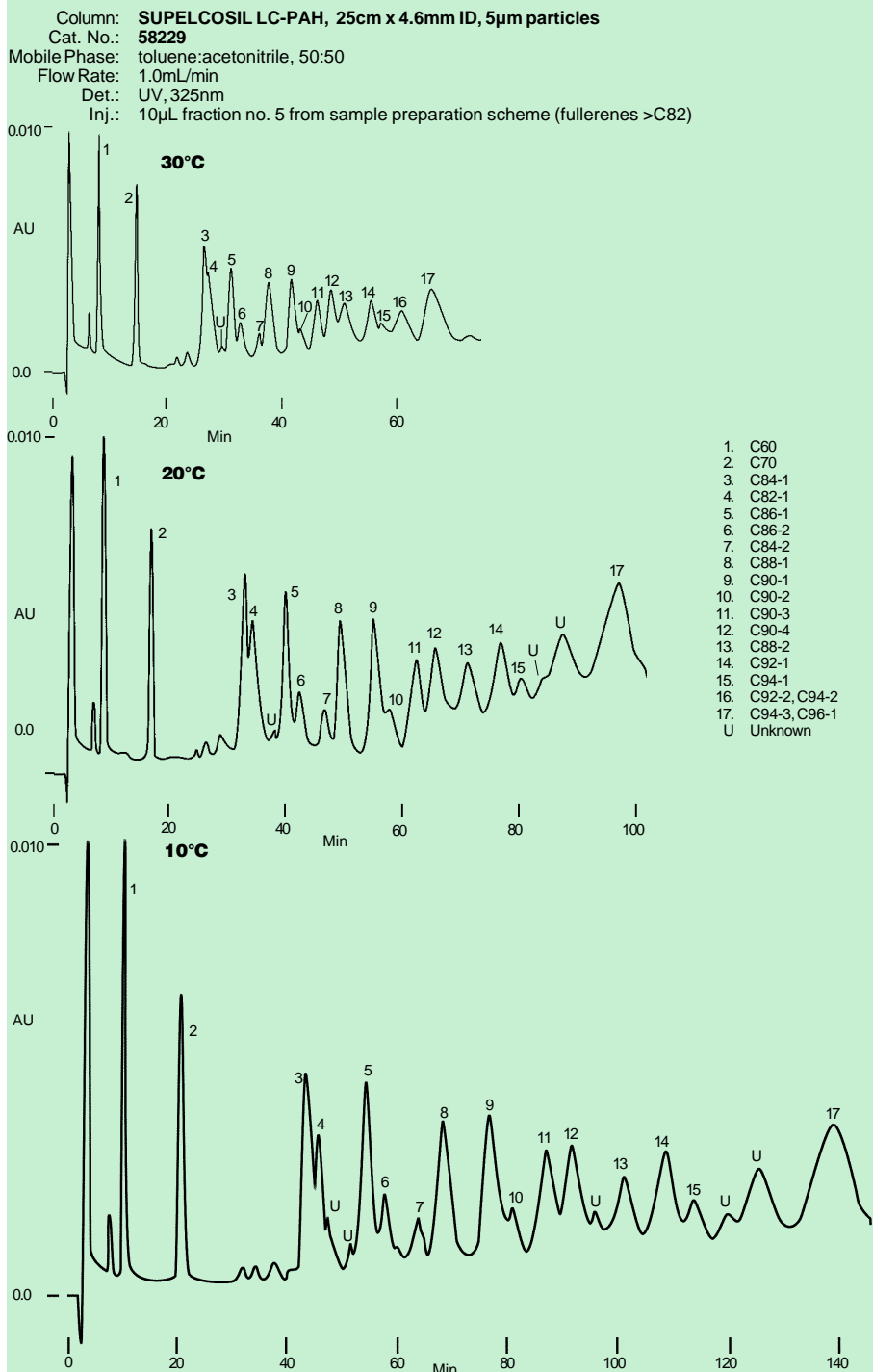


Figure provided by Dr. Kiyokatsu Jinno, School of Materials Science, Toyohashi University of Technology, Toyohashi 441, Japan. 797-0137, 0138, 0139

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