Gas Chromatography

1. REVIEWS AND BOOKS

1495 Barman, B.N., Cebolla, V.L., Mehrotra, A.K. and Mansfield, C.T.: Petroleum and coal. *Anal. Chem.,* 73 (2001) 2791-2804 - a review with 193 refs.

1496 Brettell, T.A., Inman, K., Rudin, N. and Saferstein, R.: Forensic science. *Anal. Chem.,* 73 (2001) 2735-2744 - a review with 243 refs.

1497 Cazes, J.: *Encyclopedia of Chromatography.* Marcel Dekker, Boca Raton, 2001, 952 pp.

1498 Draper, W.M.: Biological monitoring: exquisite research probes, risk assessment, and routine exposure measurement. *Anal. Chem.,* 73 (2001) 2745-2760 - a review with 153 refs.

1499 Gilpin, R.K. and Pachla, L.A.: Pharmaceuticals and related drugs. *Anal. Chem.,* 73 (2001) 2805-2816 - a review with 304 refs.

1500 Hinshaw, J.V.: Strategies for GC optimization, Part I - Setting realistic expectations. *LC-GC Eur.,* 14 (2001) 155-160 - a review with 5 refs.

1501 Korytar, P. and Matisova, E.: (Fast gas chromatography.) *Chem. Listy,* 95 (2001) 470-476 - a review with 35 refs.

1502 Sandra, P.J.F.: Gas chromatography. In: Guenzler, H. and Williams, A. (Editors),*Handb. Anal. Tech.,* Wiley-VCH Verlag GmbH, Weinheim, 2001, pp. 199-259; *C.A.,* 135 (2001) 13537m - a review with 78 refs.

1503 Van Ruth, S.M.: Methods for gas chromatography-olfactometry: a review. *Biomol. Eng.,* 17 (2001) 121-128; CA Selects Plus GC, No. 13 (2001) 400833.

1504 Workman, J., Jr., Creasy, K.E., Doherty, S., Bond, L., Koch, M., Ullman, A. and Veltkamp, D.J.: Process analytical chemistry. *Anal. Chem.,* 73 (2001) 2705-2718 - a review with 115 refs.

See also 1546, 1551, 1576, 1609, 1613, 1615, 1616, 1622, 1624, 1627, 1653, 1767, 1817, 1840, 1863, 1993, 1997, 2004, 2008, 2018, 2030, 2032, 2047, 2084.

2. FUNDAMENTALS, THEORY AND GENERAL

2a. General

1505 Chen, J.P., Liang, X.M., Zhang, Q. and Zhang, L.F.: An empirical equation for the calculation of retention time with extrapolation of temperature in gas chromatography. *Chromatographia,* 53 (2001) 548-552.

1506 Chen, J.P., Liang, X.M., Zhang, Q. and Zhang, L.F.: Prediction of GC retention values under various column temperature conditions from temperature programmed data. *Chromatographia,* 53 (2001) 539-547.

1507 Hinshaw, J.V.: Basic GC measurements and calculations. *LC-GC Eur.,* 14 (2001) 90-96.

1508 Medina, J.C., Wu, N. and Lee, M.L.: Comparison of empirical peak capacities for high-efficiency capillary chromatographic techniques. *Anal. Chem.,* 73 (2001) 1301-1306.

1509 Ong, R., Shellie, R. and Marriott, P.: Observation of non-linear chromatographic peaks in comprehensive two-dimensional gas chromatography. *J. Sep. Sci.,* 24 (2001) 367-377.

1510 Schoenmakers, P.: Hans Poppe. Navigating the principles of chromatography. *Chromatographia,* 53 (2001) 473-474.

1511 Steiner, F.: 65th Birthday of professor Dr. Heinz Engelhardt. *Chromatographia,* 54 (2001) 139-140.

See also 1601.

2b. Thermodynamics and theoretical relationships

1512 Kowalska, T.: Thermodynamic significance of retention-boiling point-molar volume and retention-boiling point-molar refraction correlation for congeneric sets of solutes in GC. *Acta Chromatogr.,* 11 (2001) 7-11; CA Selects Plus GC, No. 16 (2001) 533178.

See also 1629.

2c. Relationship between structure and chromatographic behaviour

1513 Ivanciuc, O., Ivanciuc, T., Klein, D.J., Seitz, W.A. and Balaban, A.T.: Quantitative structure-retention relationships for gas chromatographic retention indices of alkylbenzenes with molecular graph descriptors. *SAR QSAR Environ. Res.,* 11 (2001) 419-452; CA Selects Plus GC, No. 11 (2001) 327497.

1514 Lomsugarit, S., Jeyashoke, N. and Krisnangkura, K.: Relationship between carbon number and peak width in gas chromatography. *J. Chromatogr. A,* 926 (2001) 337-340.

1515 Randic, M., Basak, S.C., Pompe, M. and Novic, M.: Prediction of gas chromatographic retention indices using variable connectivity index. *Acta Chim. Slov.,* 48 (2001) 169-180; CA Selects Plus GC, No. 15 (2001) 465462.

1516 Wang, W., Zhang, X., Lu, P. and Deng, J.: Prediction of parameters c and a in reversed-phase high-performance liquid chromatography using retention parameters in gas liquid chromatography. *Anal. Lett.,* 34 (2001) 785-802.

See also 1505, 1506, 1598, 1631, 1675, 1884.

2d. Measurement of physico-chemical and related values

1517 Al-Ghamdi, A.M.S.: Inverse gas chromatographic characterization of polycaprolactone. *Arabian J. Sci. Eng., Sect. A,* 26, No. 1A (2001) 11-22; CA Selects Plus GC, No. 13 (2001) 427754.

1518 Askin, A. and Inel, O.: Evaluation of the heat of adsorption of some *n*-alkanes on alumina and zeolite by inverse gas chromatography. *Separ. Sci. Technol.,* 36 (2001) 381-397.

1519 Balcyoolu, N. and Guner, V.: A high temperature kinetic measurement with a coupled reactor-GC system. *Instrum. Sci. Technol.,* 29 (2001) 193-200; *C.A.,* 135 (2001) 51665j.

1520 Bicanic, D., Dhka, O., Kantor, Z., Nagy, G., Cozijnsen, J., Mercuri, F., Gibkes, J., Dadarlat, D., Gerkema, E., Thoen, J. and Pitsi, G.: Assessing the extent of oxidation in the thermally stressed safflower oil. Part II: two variants of photopyroelectric method, differential scanning calorimetry and gas chromatography. *Anal. Sci.,* 17(Spec. Issue) (2001) s551-s554.

1521 Comard, M.-P., Calvet, R., Del-Confetto, S., Dodds, J.A. and Balard, H.: Estimation of the lateral to basal surface ratio of talc by inverse gas chromatography. *Macromol. Symp.,* 169 (2001) 19-34; CA Selects Plus GC, No. 16 (2001) 526685.

1522 Cossarutto, L., Vagner, C., Finqueneisel, G., Weber, J.V. and Zimny, T.: Surface free energy (γ_s^d) of active carbons determined by inverse gas chromatography: influences of the origin of precursors, the burn off level and the chemical modification. *Appl. Surf. Sci.,* 177 (2001) 207-211; CA Selects Plus GC, No. 12 (2001) 368892.

1523 Gavril, D., Rashid, K.A. and Karaiskakis, G.: Study of the mechanism of the interaction of vinyl chloride with water by reversed-flow gas chromatography. *J. Chromatogr. A,* 919 (2001) 349-356.

1524 Hamieh, T., Rezzaki, M. and Schultz, J.: Study of the transition temperatures and acid-base properties of poly (methyl methacrylate) adsorbed on alumina and silica, by using inverse gas chromatography technique. *Colloids Surf., A,* 189 (2001) 279-291; CA Selects Plus GC, No. 16 (2001) 501998.

1525 Huang, R.Y.M., Shao, P., Nawawi, G., Feng, X. and Burns, C.M.: Measurements of partition, diffusion coefficients of solvents in polymer membranes using rectangular thin-channel column inverse gas chromatography (RTCCIGC). *J. Membr. Sci.,* 188 (2001) 205-218; CA Selects Plus GC, No. 12 (2001) 370472.

1526 Isidorov, V.A., Krajewska, U., Dubis, E.N. and Jdanova, M.A.: Partition coefficients of alkyl aromatic hydrocarbons and esters in a hexane-acetonitrile system. *J. Chromatogr. A,* 923 (2001) 127-136.

1527 Jiang, W.H., Liu, H., Hu, H.J. and Han, S.J.: Infinite dilution diffusion coefficients of *n*-hexane, *n*-heptane and *n*-octane in polyisobutylene by inverse gas chromatographic measurements. *Eur. Polym. J.,* 37 (2001) 1705-1712; CA Selects Plus GC, No. 13 (2001) 415859.

1528 Katsanos, N.A., Iliopoulou, E., Plagianakos, V. and Mangou, H.: Interrelations between adsorption energies and local isotherms, local monolayer capacities, and energy distribution functions, as determined for heterogenous surfaces by inverse gas chromatography. *J. Colloid Interface Sci.,* 239 (2001) 10-19; CA Selects Plus GC, No. 13 (2001) 414404.

1529 Koutek, B., Cvacka, J., Streinz, L., Vrkocova, P., Doubsky, J., Simonova, H., Feltl, L. and Svoboda, V.: Comparison of the employing gas chromatography retention data to determine vapour pressures at 298 K. *J. Chromatogr. A,* 923 (2001) 137-152.

1530 Levoguer, C., Butler, D., Thielmann, F. and Williams, D.: Characterizing the physicochemical properties of pharmaceutical materials. *Pharm. Technol. Eur.,* 12, No. 11 (2000) 36-42; *C.A.,* 135 (2001) 111811r.

1531 Mishima, K., Matsuyama, K., Baba, M., Ohuchi, M. and Hakushi, T.: Measurement of the solubilities of undecanolide and pentadecanolactone in supercritical carbon dioxide by supercritical fluid chromatography. *Solvent Extr. Res. Dev., Jpn.,* 8 (2001) 215-222; CA Selects Plus GC, No. 12 (2001) 375178.

1532 Mutelet, F. and Rogalski, M.: Experimental determination and predicition of the gas-liquid *n*-hexadecane partition coefficients. *J. Chromatogr. A,* 923 (2001) 153-163.

1533 Newell, H.E., Buckton, G., Butler, D.A., Thielmann, F. and Williams, D.R.: The use of inverse phase gas chromatography to measure the surface energy of crystalline, amorphous, and recently milled lactose. *Pharm. Res.,* 18 (2001) 662-666; CA Selects Plus GC, No. 16 (2001) 506568.

1534 Pandey, I.P. and Kumar, T.B.: Geochemical isomerism and thermal maturity study through GC-MS analysis of steranes in petroleum, of Cambay Basin, India. *Acta Cienc. Indica, Chem.,* 26, No. 3 (2000) 63-68; *C.A.,* 135 (2001) 48317s.

1535 Rittfeldt, L.: Determination of vapor pressure of low-volatility compounds using a method to obtain saturated vapor with coated capillary columns. *Anal. Chem.,* 73 (2001) 2405-2411.

1536 Thielmann, F., Butler, D.A. and Williams, D.R.: Characterization of porous materials by finite concentration inverse gas chromatography. *Colloids Surf., A,* 187-188 (2001) 267-272; CA Selects Plus GC, No. 15 (2001) 483407.

1537 Tze, W.T. and Gardner, D.J.: Contact angle and IGC measurements for probing surface-chemical changes in the recycling of wood pulp fibers. *J. Adhes. Sci. Technol.,* 15 (2001) 223-241; *C.A.,* 135 (2001) 62861w.

1538 Voelkel, A. and Grzeskowiak, T.: Properties of zirconate modificates of silica gel as examined by inverse gas chromatography. *Macromol. Symp.,* 169 (2001) 35-43; CA Selects Plus GC, No. 16 (2001) 526686.

1539 Voelkel, A., Milczewska, K. and Jeczalik, J.: Characterization of the interactions in polymer/silica systems by inverse gas chromatography. *Macromol. Symp.,* 169 (2001) 45-55; CA Selects Plus GC, No. 16 (2001) 526687.

1540 Xie, J.-J., Pan, Q.-M., and Pan, Z.-R.: (Vapor-liquid equilibria of polystyrene/solvent studied by gas-liquid chromatography). *Xiangtan Daxue Ziran Kexue Xuebao,* 22, No. 3 (2000) 40-45; *C.A.,* 135 (2001) 33827j.

1541 Zenkevich, I.G.: Interpretation of retention indices in gas chromatography for establishing structures of isomeric products of alkylarenes radical chlorination. *Russ. J. Org. Chem.,* 37 (2001) 270-280; CA Selects Plus GC, No. 15 (2001) 482851.

1542 Zhou, S.-l., Ni, Z.-h., Yuan, X.-h., Zong, Z.-m. and Wei, X.-y.: (Study on the mechanism of catalytic hydrogenation of 9,10-diphenylanthracene by GC-MS). *Ranliao Huaxue Xuebao,* 29 (2001) 80-82; *C.A.,* 135 (2001) 21186m.

See also 1599, 1652, 1934, 1937, 1938, 1943.

3. GENERAL TECHNIQUES

3a. Apparatus and accessories

1543 Beens, J., Dallüge, J., Adahchour, M., Vreuls, R.J.J. and Brinkman, U.A.T.: Moving cryogenic modulator for the comprehensive two-dimensional gas chromatography (GC x GC) of surface water contaminants. *J. Microcolumn. Separ.,* 13 (2001) 134-140.

1544 Bonnet, E.F.J.-V.: A fixed-bed catalytic microreactor with repetitive injection gas chromatographic/mass spectrometric analysis. Avail. *UMI,* Order No. DA9975806, 2000, 168 pp.; CA Selects Plus GC, No. 11 (2001) 344406.

1545 Briscoe, C.G., Burdon, J.W., Chan, T., Foley, B., Grodzinski, P., Hawkins, G., Huang, R.-f., Kahn, P., Marrero, R., McGarry, M.W., Tuggle, T. and Yu, H.: Multilayered microfluidic device for analyte reactions. *PCT Int.* Appl. WO 01 41,931 (Cl. B01L3/00), 14 Jun. 2001, US Appl. 466,325, 17 Dec. 1999; 126 pp.; *C.A.,* 135 (2001) 30964r.

1546 Bruno, T.J.: A review of capillary and packed column gas chromatographs. *Sep. Purif. Methods,* 29 (2000) 27-61; CA Selects Plus GC, No. 15 (2001) 498551.

1547 Bujok, O., Tan, V., Klein, E., Nopper, R., Bauer, R., Engel, A., Gerhards, M.-T., Afchine, A., McKenna, D.S., Schmidt, U., Wienhlod, F.G. and Fischer, H.: GHOST - a novel airborne gas chromatograph for in situ measurements of long-lived tracers in the lower stratosphere: method and applications. *J. Atmos. Chem.,* 39 (2001) 37-64; CA Selects Plus GC, No. 13 (2001) 411894.

1548 Ciucanu, I. and Pawliszyn, J.: Design of continuous-monitoring device based on membrane extraction with sorbent interface and micro-gas chromatograph. *Field Anal. Chem. Technol.,* 5 (2001) 69-74; CA Selects Plus GC, No. 12 (2001) 361200.

1549 Godula, M., Hajslova, J., Mastouska, K. and Krivanková, J.: Optimization and application of the PTV injector for the analysis of pesticide residues. *J. Sep. Sci.,* 24 (2001) 355-366.

1550 Hilling, A.L. and Smith, G.: Evaluation of a unique purge-and-trap interface. *Environ. Test. Anal.,* 10, No. 3 (2001) 15-19; *C.A.,* 135 (2001) 116130c.

1551 Hinshaw, J.V.: GC ovens - a hot topic. *LC-GC Eur.,* 14 (2001) 378-383 - a review with 11 refs.

1552 Hirai, K.: (Gas chromatograph). *Jpn. Kokai Tokkyo Koho* JP 2001 108,664 (Cl. G01N30/54), 20 Apr. 2001, Appl. 1999/283,342, 4 Oct. 1999; 4 pp.; *C.A.,* 134 (2001) 320331c.

1553 Magni, P., Munari, F. and Grob, K.: Vaporization injector. *PCT Int.* Appl. WO 01 33,209 (Cl. G01N30/00), 10 May 2001, IT Appl. 1999/MI2,271, 29 Oct. 1999; 13 pp.; *C.A.,* 134 (2001) 335836v.

1554 Munari, F., Zilioli, G., Raffaeta, R., Facchetti, R. and Magni, P.: Chromatography apparatus with direct heating of the capillary column. *PCT Int.* Appl. WO 01 48,469 (Cl. G01N30/30), 5 Jul. 2001, IT Appl. 1999/MI2,708, 27 Dec. 1999; 36 pp.; *C.A.,* 135 (2001) 55167w.

1555 Overton, E.B., Carney, K.R., Roques, N. and Dharmasena, H.P.: Fast GC instrumentation and analysis for field applications. *Field Anal. Chem. Technol.,* 5 (2001) 97-105; *C.A.,* 135 (2001) 40154r.

1556 Pinto, J.S.S., Cappelaro, E.A. and Lancas, F.M.: Design and construction of an on-line SPE-SFE-CGC system. *J. Braz. Chem. Soc.,* 12 (2001) 192-195; *C.A.,* 135 (2001) 9708a.

1557 Reeves, P.C. and Pamplin, K.L.: A strategy for incorporating hand-on GC-MS into a general chemistry lecture and laboratory courses. *J. Chem. Educ.,* 78 (2001) 368-370.

1558 Salinas, J.P.: Design, construction, and applications of an automated microprocessor-controlled gas chromatograph fraction collector-olfactometer. Avail. *UMI,* Order No. DA9973987, 2000, 234 pp.; CA Selects Plus GC, No. 11 (2001) 325359.

1559 Scott, R.P.W., Little, C.J. and de la Pena, M.: The Unimas™ detector: a near-universal interface between HPLC and GC. *Chromatographia,* 53(Suppl.) (2001) S218-S223.

1560 Tablack, P.: (Significance of the right GC injection). *Labor-Praxis,* 25, No. 3 (2001) 56-62; *C.A.,* 134 (2001) 304776w.

1561 Thordarson, E. and Norberg, J.: Liquid-liquid extraction device and on-line transfer to a gas chromatography apparatus. *PCT Int.* Appl. WO 01 31,330 (Cl. G01N30/04), 3 May 2001, SE Appl. 1999/3,886, 27 Oct. 1999; 24 pp.; *C.A.,* 134 (2001) 320334f.

1562 Trochesset, W.: Integrated valve design for gas chromatograph. *U.S.* US 6227034 B1, 8 May 2001; 18 pp.; CA Selects Plus GC, No. 11 (2001) 326470.

1563 Veriotti, T. and Sacks, R.: High speed GC and GC/MS with a series-coupled column ensemble using stop-flow operation. *Anal. Chem.,* 73 (2001) 3045-3050.

1564 Xu, C., Zhang, Q. and Liu, J.: (Method and equipment for determining vaporization rate of residual oil). *Faming Zhuanli Shenqing Gongkai Shuomingshu* CN 1,264,834 (Cl. G01N33/28), 30 Aug. 2000, Appl. 2,000,105,545, 31 Mar. 2000; 10 pp.; *C.A.,* 135 (2001) 7653e.

1565 Yasui, S.: (Sampling valve for gas chromatographic apparatus). *Jpn. Kokai Tokkyo Koho* JP 2001 165,918 (Cl. G01N30/04), 22 Jun. 2001, Appl. 1999/354,939, 14 Dec. 1999; 4 pp.; *C.A.,* 135 (2001) 55112z.

1566 Yoshii, M. and Uegaki, H.: (Sampling device). *Jpn. Kokai Tokkyo Koho* JP 2001 165,920 (Cl. G01N30/04), 22 Jun. 2001, Appl. 1999/354,941, 14 Dec. 1999; 4 pp.; *C.A.,* 135 (2001) 55113a.

See also 1519, 1597, 1608, 1626, 1634, 2031, 2032, 2036, 2040, 2043.

3b. Detectors and detection reagents

1567 Cochran, J.L., McCarthy, J.F., Palumbo, A.V. and Phelps, T.J.: Position sensitive radioactivity detection for gas and liquid chromatography. *U.S.* US 6,229,146 (Cl. 250-364; G01T1/20), 8 May 2001, Appl. 164,107, 30 Sep. 1998; 7 pp.; *C.A.,* 134 (2001) 333156z.

1568 Ke, C.-B., Su, K.-D. and Lin, K.-C.: Laser-enhanced ionization and laser-induced atomic fluorescence as element-specific detection methods for gas chromatography. Application to organotin analysis. *J. Chromatogr. A,* 921 (2001) 247-253.

1569 Koo, J.C. and Yu, C.M.: Glow discharge detector. *PCT Int.* Appl. WO 01 44,800 (Cl. G01N30/02), 21 Jun. 2001, US Appl. 464,668, 15 Dec. 1999; 17 pp.; *C.A.,* 135 (2001) 40138p.

1570 Salimian, S.M.: Flame ionization detector. *U.S.* US 6,238,622 (Cl. 422-54; G01N30/68), 29 May 2001, Appl. 986,045, 5 Dec. 1997; 11 pp.; *C.A.,* 135 (2001) 13655y.

1571 Vékey, K.: Mass spectrometry and mass-selective detection in chromatography. *J. Chromatogr. A,* 921 (2001) 227-236.

See also 1545, 1604, 1606, 1607, 1610.

3c. Sorbents and columns, packing procedures

1572 Abalos, M., Mas, R., Suc, V. and Bayona, J.M.: Evaluation and capillary gas chromatography columns for the determination of free volatile amines after solid-phase microextraction. *Chromatographia,* 54 (2001) 109-113.

1573 Amirkhanashvili, K., Dzagania, M., Nadiradze, N., Burkiashvili, N. and Zautashvili, M.: Comparison of chromatographic properties of the standard OV 1 and liquid crystal stationary phases. *Bull. Georgian Acad. Sci.,* 162 (2000) 83-86; *C.A.,* 135 (2001) 28457j.

1574 Berezkin, V.G., Lapin, A.B. and Malyukova, I.V.: Effect of efficiency improvement by injecting a sample at a lower carrier gas velocity in isothermal gas-liquid chromatography. *J. Chromatogr. A,* 919 (2001) 357-361.

1575 Bicchi, C.: Derivatized cyclodextrins in enantiomer GC separation of volatiles. *Proc. Phytochem. Soc. Eur.,* 46 (2000) 177-186; *C.A.,* 134 (2001) 365853r.

1576 Blomberg, L.G.: Silicone stationary phases for gas chromatography. *LC-GC Eur.,* 14 (2001) 106-112 - a review with 30 refs.

1577 Chen, G., Tang, K. and Yan, J.: Three new kinds of alkylated and silylated β-cyclodextrin derivatives for gas chromatographic stationary phase. *Huaxue Tongbao,* (2001) 296-299; CA Selects Plus GC, No. 13 (2001) 417430.

1578 Day, G.M., Cervini, R. and Sharp, G.J.: Thermally stable siloxane copolymers for gas chromatography. *Polym. Prep. (Am. Chem. Soc., Div. Polym. Chem.),* 42 (2001) 207-208; *C.A.,* 135 (2001) 40164u.

1579 De Schaefer, C.R., de Ruiz Holgado, M.E.F. and Arancibia, E.L.: Sucrose derivative surfactants studied by inverse gas chromatography. *J. Colloid Interface Sci.,* 239 (2001) 222-225; CA Selects Plus GC, No. 13 (2001) 414407.

1580 Djozan, D., Assadi, Y. and Haddadi, S.H.: Anodized aluminium wire as a solid-phase microextraction fiber. *Anal. Chem.,* 73 (2001) 4054-4058.

1581 Kou, D. and Li, X.: (Preparation and characterization of capillary gas chromatographic column using butylammoniumtoluensulfonate as stationary phase). *Fenxi Huaxue,* 29 (2001) 699-702; CA Selects Plus GC, No. 15 (2001) 484433.

1582 Kou, D.-m. and Li, X.-h.: (Studies on separation capability of zinc dodecylbenzenesulfonate as gas chromatographic stationary phase). *Shiyou Huagong,* 30 (2001) 228-231; *C.A.,* 134 (2001) 335816p.

1583 Li, X., Zhao, M. and Kou, D.: (Preparation and application of a capillary gas chromatographic column using zinc dodecylbenzenesulphonate as stationary phase). *Fenxi Huaxue,* 29 (2001) 810-813; CA Selects Plus GC, No. 17 (2001) 566308.

1584 Rykowska, I. and Wasiak, W.: Comparative studies of gas chromatographic properties of new packings with chemically bonded complexes. *J. Chromatogr. Sci.,* 39 (2001) 313-320.

1585 Shinbo, K., Takahashi, R. and Suzuki, H.: Absorbents and absorptive moldings and their use in chemical separation devices. *Jpn. Kokai Tokkyo Koho* JP 2001 129,395 (Cl. B01J20/26), 15 May 2001, Appl. 1999/319,044, 10 Nov. 1999; 10 pp.; *C.A.,* 134 (2001) 354229r.

1586 Slizhov, Y.G. and Gavrilenko, M.A.: Gas-chromatographic properties of Silochrom with a surface layer of nickel dimethylglyoximate and acetylacetonate complexes. *J. Anal. Chem.,* 56 (2001) 538-541.

1587 Tang, K.-w., Chen, G.-b. and Yi, J.-m.: (Study of alkylated and silylated β-cyclodextrin used as chiral stationary phase for capillary gas chromatography). *Fenxi Shiyanshi,* 20, No. 2 (2001) 71-73; CA Selects Plus GC, No. 11 (2001) 332614.

1588 Tang, X.-d., Zhao, J. and Yang, T.-z.: (Research on a new side-chain liquid crystaline polysiloxane as stationary phase for capillary column gas chromatography). *Sepu,* 19 (2001) 264-267.

1589 Wang, D.: Sol-gel chemistry-mediated novel approach to column technology for high-resolution capillary gas chromatography. Avail. *UMI,* Order No. DA9984600, 2001; 276 pp.; CA Selects Plus GC, No. 13 (2001) 410824.

1590 Xiao, C., Han, S., Wang, Z., Xing, J. and Wu, C.: Application of polysilicone fullerene coating for solid-phase microextraction in the determination of semi-volatile compounds. *J. Chromatogr. A,* 927 (2001) 121-130.

1591 Yan, J., Tang, K. and Yi, J.: (Separation of isomers on β-CD polymer-based gas chromatographic stationary phase). *Huaxue Shiji,* 23, No. 2 (2001) 86-88,106; CA Selects Plus GC, No. 12 (2001) 366948.

1592 Yu, X.D., Fang, H., Lin, L., Han, H.M. and Wu, C.Y.: Study of the gas chromatographic properties of calix[4]arene derivatives containing different substitutes on the upper rim. *Chromatographia,* 53 (2001) 519-524.

1593 Yuan, X. and Chen, Y.: (Performance and application of decompression and thinly coated non-polar liquid phase in gas chromatographic column). *Fenxi Huaxue,* 29 (2001) 549-551; CA Selects Plus GC, No. 13 (2001) 412445.

1594 Zeng, Z., Qiu, W. and Huang, Z.: Solid-phase microextraction using fused-silica fibers coated with sol-gel-derived hydroxy-crown ether. *Anal. Chem.,* 73 (2001) 2429-2436.

See also 1517, 1603, 1646, 1710, 1719, 2048.

3d. Quantitative analysis

1595 Saelzer, R., Godoy, G., Vega, M., de Diego, M., Godoy, R. and Ríos, G.: Instrumental planar chromatographic determination of benzodiazepines: comparison with liquid chromatography and gas chromatography. *J. Assoc. Off. Anal. Chem. Soc.,* 84 (2001) 1287-1295.

1596 Satchithanandam, S., Fritsche, J. and Rader, J.I.: Extension of AOAC official method 996.01 to the analysis of standard reference material (SRM) 1846 and infant formulas. *J. Assoc. Off. Anal. Chem. Int.,* 84 (2001) 805-813.

See also 1984.

3e. Preparative scale chromatography

See 1605.

4. SPECIAL TECHNIQUES

4a. Automation

1597 Wang, J.-L. and Chen, W.-L.: Construction and validation of automated purge-and-trap-gas chromatography for the determination of volatile organic compounds. *J. Chromatogr. A,* 927 (2001) 143-154.

See also 1558.

4b. Computerization and modelling

1598 Eide, I., Neverdal, G., Thorvaldsen, B., Shen, H., Grung, B. and Kvalheim, O.: Resolution of GC-MS data of complex PAC mixtures and regression modeling of mutagenicity by PLS. *Environ. Sci. Technol.,* 35 (2001) 2314-2318.

1599 Fu, H., Feng, Y., Zhao, L. and Liu, L.: (Experiment of computer simulation of relationship between resolution and column temperature in gas chromatography). *Daxue Huaxue,* 16, No. 2 (2001) 47-48; CA Selects Plus GC, No. 12 (2001) 387363.

1600 Han, S., Li, X., Shan, M. and Wang, X.: (Problems related to gas chromatographic examination). *Huaxue Fenxi Jiliang,* 10 (2001) 30-31; CA Selects Plus GC, No. 11 (2001) 341008.

1601 McGuigan, M. and Sacks, R.: Band-trajectory model for temperature-programmed series-coupled column ensembles with pressure-tunable selectivity. *Anal. Chem.,* 73 (2001) 3112-3118.

1602 Pyo, D. and Shin, H.: Selective data reduction in gas chromatography/infrared spectrometry. *Bull. Korean Chem. Soc.,* 22 (2001) 488-492; CA Selects Plus GC, No. 13 (2001) 401473.

4c. Combination with other physico-chemical techniques (MS, IR etc.)

1603 Amirav, A., Gordin, A. and Tzanani, N.: Supersonic gas chromatography/mass spectrometry. *Rapid Commun. Mass Spectrom.,* 15 (2001) 811-820.

1604 Berkout, V.D., Cotter, R.J. and Segers, D.P.: Miniaturized EI/Q/oa TOF mass spectrometer. *J. Am. Soc. Mass Spectrom.,* 12 (2001) 641-647; *C.A.,* 135 (2001) 70271u.

1605 Bressette, A.R.: The microscale laboratory: from GC to NMR: a simple semipreparative gas chromatography collection method using NMR tubes. *J. Chem. Educ.,* 78 (2001) 366-367.

1606 Garzotti, M., Rovatti, L. and Hamdan, M.: Coupling of a supercritical fluid chromatography system to a hybrid (Q-TOF 2) mass spectrometer: on-line accurate mass measurements. *Rapid Commun. Mass Spectrom.,* 15 (2001) 1187-1190.

1607 Harada, S.: Quadrupole mass spectrometer. *U.S. Pat.* Appl. Publ. US 2001 9,266 (Cl. 250-286; B01D59/44), 26 Jul. 2001, JP Appl. 2000/9,707, 19 Jan. 2000; 6 pp.; *C.A.,* 135 (2001) 114254x.

1608 Kenmochi, Y. and Arikawa, A.: GC/MS/MS method and apparatus with improved GC resolution. *Jpn. Kokai Tokkyo Koho* JP 2001 124,754 (Cl. G01N30/48), 11 May 2001, Appl. 1999/301,162, 22 Oct. 1999; 14 pp.; *C.A.,* 134 (2001) 337921t.

1609 Moldoveanu, S.C.: Pyrolysis GC/MS, present and future (recent past and present needs). *J. Microcolumn Separ.,* 13 (2001) 102-125 - a review with 32 refs.

1610 Syage, J.A., Nies, B.J., Evans, M.D. and Hanold, K.A.: Field-portable, high-speed GC/TOFMS. *J. Am. Soc. Mass Spectrom.,* 12 (2001) 648-655; *C.A.,* 135 (2001) 70272v.

See also 1563, 1571, 1602, 1624, 1708, 1894, 1997.

4e. Functional analysis

1611 Docherty, G., Jones, V. and Evershed, R.P.: Practical and theoretical considerations in the gas chromatography/combustion/isotope ratio mass spectrometry $\delta^{13}C$ analysis of small polyfunctional compounds. *Rapid Commun. Mass Spectrom.,* 15 (2001) 730-738.

1612 Pepe, C. and Dif, K.: The use of ethanethiol to locate the triple bond in alkynes and the double bond in substituted alkenes by gas chromatography/mass spectrometry. *Rapid Commun. Mass Spectrom.,* 15 (2001) 97-103.

See also 1694, 2093.

4f. Trace analysis and preseparation techniques

1613 Majors, R.E.: New designs and formats in solid-phase extraction sample preparation. *LC-GC N. Amer.,* 19 (2001) 678-687.

1614 Tanaka, S., Tsuda, Y., Kitamura, S., Shimada, M., Arito, H. and Seki, Y.: A simple method for detecting breakthroughs in used chemical cartridges. *AIHAJ,* 62 (2001) 168-171; *C.A.,* 135 (2001) 96701j.

1615 Zhang, J. and Ye, F.: (Solid phase microextraction-new method of sample preparation in gas chromatography). *Lihua Jianyan, Huaxue Fence,* 37 (2001) 236-239; CA Selects Plus GC, No. 15 (2001) 497483 - a review with 55 refs.

See also 1561, 1852, 1864, 1909, 2052.

4g. Enantiomers, separation

1616 Branch, S.K.: Sub- and supercritical fluid chromatography for enantiomer separations. In: Subramanian, G. (Editor),*Chiral Sep. Tech. (2nd Ed.),* Wiley-VCH Verlag GmbH, Weinhein, 2001, pp. 299-315; *C.A.,* 134 (2001) 340106m - a review with 76 refs.

1617 Desmet, K., Sandra, P., Vízvárdi, K., Hoornaert, G.J. and van der Eycken, E.: Enantioselective packed column SFC for the separation of 2-oxatetracyclo [5.4.0.$0^{1,8}$.$0^{5,11}$] undec-9-ene derivatives. *J. Microcolumn Separ.,* 13 (2001) 163-168.

1618 Li, H. and Zong, M.: (Determination of enantiopurity of (+/-)-α-methylbenzyl acetate by gas chromatography). *Guangdong Yaoxueyuan Xuebao,* 17 (2001) 5-7; CA Selects Plus GC, No. 11 (2001) 328500.

See also 1575, 1577, 1587, 1591, 1679, 1784, 1787, 1813, 1815, 1820, 1958.

4h. Other special techniques

1619 Bremer, R. and Hoffmann, A.: (Multiple-column gas chromatography of thermally desorbed samples with water removal). *Ger.* DE 19,960,631 (Cl. G01N30/46), 12 Jul. 2001, Appl. 19,960,631, 16 Dec. 1999; 8 pp.; *C.A.,* 135 (2001) 116164s.

1620 Coutant, C.A.L.: Programmable selectivity and fast temperature programming for high-speed GC analysis of wide boiling-point-range mixtures. Avail. *UMI,* Order No. DA9977137, 2000, 163 pp.; *C.A.*, 135 (2001) 101636y.

1621 Fraga, C.G.: Comprehensive two-dimensional gas chromatography and chemometrics for the analysis of complex mixtures. Avail. *UMI,* Order No. DA9983476, 2001; 109 pp.; CA Selects Plus GC, No. 13 (2001) 410933.

1622 Peene, J., de Zeeuw, J. and Junker-Buchheit, A.: (Rapid GC/MS with short column and vacuum). *LaborPraxis,* 25, No. 5 (2001) 78-80 - a review with 5 refs.

See also 1523.

4i. Supercritical fluid chromatography

1623 Carrilho, E., Tavares, M.C.H. and Lancas, F.M.: (Supercritical fluid in analytical chemistry. I. Supercritical fluid chromatography: thermodynamic definitions). *Quim. Nova,* 24 (2001) 509-515; CA Selects Plus GC, No. 17 (2001) 568823.

1624 Chen, Z.-W. and Chen, Z.: (Hyphenation of supercritical fluid separation with nuclear magnetic resonance and their applications). *Guangpu Shiyanshi,* 18 (2001) 139-144; *C.A.*, 134 (2001) 360785k - a review with 18 refs.

1625 Engelhardt, H.: (SFC, CE, and CEC: new liquid chromatography?). *Nachr. Chem.,* 48 (2000) 54-55; *C.A.*, 134 (2001) 347780k.

1626 Hoke, S.H.,II., Tomlinson, J.A.II., Bolden, R.D., Morand, K.L., Pinkston, J.D. and Wehmeyer, K.R.: Increasing bioanalytical throughput using pc-SFC-MS/MS: 10 minutes per 96-well plate. *Anal. Chem.,* 73 (2001) 3083-3088.

1627 Jung, J. and Perrut, M.: Particle design using supercritical fluids: literature and patent survey. *J. Supercrit. Fluids,* 20 (2001) 179-219 - a review with 250 refs.

1628 Lu, F., Li, L., Sun, P. and Wu, Y.: Subcritical column and capillary chromatography with water as mobile phase and flame ionization detection. *J. Chin. Pharm. Sci.,* 10 (2001) 39-41; *C.A.*, 135 (2001) 13633q.

1629 Zou, W.: Fundamental studies in packed column supercritical fluid chromatography: column efficiency, thermodynamics and retention mechanism. Avail. *UMI,* Order No. DA9980764, 2001; 171 pp.; CA Selects Plus GC, No. 13 (2001) 410553.

See also 1531, 1556, 1606, 1616, 1617, 1711, 1731, 1750, 1760, 1762, 1763, 1789, 1792, 1845, 1859, 1889, 1945, 1949, 1958, 1962, 1963, 1969, 1983, 2049, 2051, 2060, 2078.

5. HYDROCARBONS AND HALOGEN DERIVATIVES

5a. Aliphatic hydrocarbons

1630 Barber, C.J., Bastow, T.P., Grice, K., Alexander, R. and Kagi, R.I.: Analysis of crocetane in crude oils and sediments: novel stationary phases for use in GC-MS. *Org. Geochem.,* 32 (2001) 765-769; *C.A.*, 135 (2001) 63478p.

1631 González, F.R., Castells, R.C. and Nardillo, A.M.: Behavior of *n*-alkanes on poly(oxyethylene) capillary columns. Evaluation of interfacial effects. *J. Chromatogr. A,* 927 (2001) 111-120.

1632 Koziel, E. and Hibner, Z.: (N-pentane-determination method). *Podstawy Metody Oceny Srodowiska Pr.,* 16, No. 3 (2000) 125-129; *C.A.*, 134 (2001) 370910m.

1633 Ollivier, D., Souillol, S. and Guerere, M.: (Determination of low levels of residual hexane in vegetable oils). *Ann. Falsif. Expert. Chim. Toxicol.,* 93, No. 950 (2000) 111-114; *C.A.*, 134 (2001) 294721h.

1634 Vázquez, M.M., Blanco, M.E.V., Lorenzo, S.M., Mahía, P.L., Fernández, E.F. and Rodríguez, D.P.: Application of programmed-temperature split/splitless injection to the trace analysis of aliphatic hydrocarbons by gas chromatography. *J. Chromatogr. A,* 919 (2001) 363-371.

1635 Xin, R., Zhang, P., Liang, J. and Song, C.: (Determination of gaseous hydrocarbons in irradiated trialkylphosphine oxide by gas chromatograph). *Huaxue Fenxi Jiliang,* 9, No. 2 (2000) 18-19,32; CA Selects Plus GC, No. 11 (2001) 340713.

See also 1527, 1532, 1612, 2046, 2062, 2080.

5b. Cyclic hydrocarbons, fullerenes

1636 Akiyama, K.: Analysis of aromatic hydrocarbon types in diesel fuels by capillary multi-dimensional gas chromatography. *Chromatographia,* 53(Suppl.) (2001) S340-S344.

1637 Bertoni, G., Tappa, R. and Cecinato, A.: Environmental monitoring of semi-volatile polycyclic aromatic hydrocarbons by means of diffusive sampling devices and GC-MS analysis. *Chromatographia,* 53(Suppl.) (2001) S312-S316.

1638 Havenga, W.J. and Rohwer, E.R.: The use of SPME and GC-MS for the chemical characterization and assessment of PAH pollution in aqueous environmental samples. *Int. J. Environ. Anal. Chem.,* 78 (2000) 205-221.

1639 Kalina, A.: (Aromatic hydrocarbons-method for determination using passive samples). *Podstawy Metody Oceny Srodowiska Pr.,* 16, No. 3 (2000) 149-158; *C.A.*, 134 (2001) 370915s.

1640 Li, N. and Lee, H.K.: Solid-phase extraction of polycyclic aromatic hydrocarbons in surface water. Negative effect of humic acid. *J. Chromatogr. A,* 921 (2001) 255-263.

1641 Madej, M. and Jezewska, A.: (Benzene-determination method). *Podstawy Metody Oceny Srodowiska Pr.,* 16, No. 3 (2000) 41-45; *C.A.*, 134 (2001) 370895k.

1642 Mazeas, L. and Budzinski, H.: Polycyclic aromatic hydrocarbons $^{13}C/^{12}C$ ratio measurement in petroleum and marine sediments. Application to standard reference materials and a sediment suspected of contamination from the Erika oil spill. *J. Chromatogr. A,* 923 (2001) 165-176.

1643 Romanowicz, B.: (2-Phenylpropene-determination method). *Podstawy Metody Oceny Srodowiska Pr.,* 16, no. 3 (2000) 82-86; *C.A.*, 134 (2001) 370902k.

1644 Russo, M.V. and Campanella, L.: Static headspace analysis by GC-MS (in sim mode) to determine the benzene in human tissues. *Anal. Lett.,* 34 (2001) 883-891.

1645 Shu, Y.Y. and Lai, T.L.: Effect of moisture on the extraction efficiency of polycyclic aromatic hydrocarbons from soils under atmospheric pressure by focused microwave-assisted extraction. *J. Chromatogr. A,* 927 (2001) 131-141.

1646 Su, X.-l., Lai, X.-h., Lin, L., Han, H.-m. and Wu, C.-y.: (Thermodynamic/extra-thermodynamic study on the separation of aromatic positional isomers on the stationary phases of calix[4]arene derivatives). *Fenxi Kexue Xuebao,* 17 (2001) 16-20; *C.A.*, 135 (2001) 40166w.

1647 Varanusupakal, P.: Application of solid phase extraction and gas chromatograph-mass spectormetry for trace determination of polycyclic aromatic hydrocarbons from atmospheric wet and dry deposition samples. Avail. *UMI,* Order No. DA9982887, 2001; 218 pp.; CA Selects Plus GC, No. 13 (2001) 410953.

1648 Wang, J., Lewis, D.M., Castranova, V., Frazer, D.G., Goldsmith, T., Tomblyn, S., Simpson, J., Stone, S., Afshari, A. and Siegel, P.D.: Characterization of asphalt fume composition under simulated road paving conditions by GC/MS and microflow LC/quadrupole time-of-flight MS. *Anal. Chem.,* 73 (2001) 3691-3700.

1649 Warneke, C., van der Veen, C., Luxembourg, S., de Gouw, J.A. and Kok, A.: Measurements of benzene and toluene in ambient air using proton-transfer-reaction mass spectrometry: calibration, humidity dependence, and field intercomparison. *Int. J. Mass Spectrom.,* 207 (2001) 167-182.

1650 Wu, L.: (Determination of biphenyl and phenanthrene in coal-tar wastewater by extraction-thin layer column GC). *Huagong Huangbao,* 21 (2001) 41-44; *C.A.*, 134 (2001) 344183g.

1651 Xu, J., Chen, W. and Shen, Q.: (Gas chromatographic method for determination of air methylcyclohexane in workplace). *Zhonghua Laodong Weisheng Zhiyebing Zazhi,* 19 (2001) 134-136; CA Selects Plus GC, No. 12 (2001) 387649.

See also 1513, 1526, 1527, 1541, 1542, 1598, 1603, 2038, 2042, 2046, 2053, 2062.

5c. Halogen derivatives

1652 Barontini, F., Cozzani, V., Cuzzola, A. and Petarca, L.: Investigation of hexabromocyclododecane thermal degradation pathways by gas chromatography/mass spectrometry. *Rapid Commun. Mass Spectrom.,* 15 (2001) 690-698.

1653 Cameron, G.: High-speed analysis of volatile organic compounds in environmental samples using small-diameter capillary columns and purge-and-trap GC-MS system. *LC-GC N. Amer.,* 19 (2001) 578-588 - a review with 9 refs.

1654 Chen, T.-C. and Her, G.-R.: On-line monitoring of trihalomethanes in drinking water using continuous-flow purge and cryofocusing gas chromatography-mass spectrometry. *J. Chromatogr. A,* 927 (2001) 229-235.

1655 Covaci, A. and Schepens, P.: Mass spectrometric detection in narrow-bore (0.10 mm I.D.) capillary chromatography. Fast, sensitive and selective analysis of polychlorinated biphenyls. *J. Chromatogr. A,* 923 (2001) 287-293.

1656 Covaci, A. and Schepens, P.: Simplified method for determination of organochlorine pollutants in human serum by solid-phase disk extraction and gas chromatography. *Chemosphere,* 43 (2001) 439-447.

1657 Covaci, A., Hura, C. and Schepens, P.: Determination of selected persistent organochlorine pollutants in human milk using solid phase disk extraction and narrow bore capillary GC-MS. *Chromatographia,* 54 (2001) 247-252.

1658 Cunha, E., Goncalves, C. and Alpendrurada, M.F.: (An automated method for the determination of some volatile organic compounds in water samples after extraction by SPME and CGC-ECD analysis). *Rev. Port. Farm.,* 50, No. 4 (2000) 141-149; *C.A.*, 134 (2001) 300505j.

1659 Kalina, A.: (Chlorinated aliphatic hydrocarbons-method for determination with passive samples). *Podstawy Metody Oceny Srodowiska Pr.,* 16, No. 3 (2000) 54-64; *C.A.*, 134 (2001) 370898p.

1660 Mandalakis, M., Tsapakis, M. and Stephanou, E.G.: Optimization and application of high-resolution gas chromatography with ion trap tandem mass spectrometry to the determination of polychlorinated biphenyls in atmospheric aerosols. *J. Chromatogr. A,* 925 (2001) 183-196.

1661 Müller, A., Björklund, E. and von Holst, C.: On-line clean-up of pressurized liquid extracts for the determination of polychlorinated biphenyls in feedingstuffs and food matrices using gas chromatography-mass spectrometry. *J. Chromatogr. A,* 925 (2001) 197-205.

1662 Naka, J. and Kobayashi, J.: (Method and apparatus for rapid analysis of chlorobenzenes in incinerator waste gas). *Jpn. Kokai Tokkyo Koho* JP 2001 124,748 (Cl. G01N30/00), 11 May 2001, Appl. 1999/304,945, 27 Oct. 1999; 8 pp.; *C.A.*, 134 (2001) 331070t.

1663 Oi, H. and Masuzawa, K.: (Chloroform formation during kraft pulp bleaching with chlorine and chlorinated compounds-determinaton of chloroform amounts by solid phase microextraction-headspace gas chromatography.) *Kami Pa Gikyoshi,* 54 (2000) 1555-1563; *C.A.*, 134 (2001) 297367h.

1664 Romanowicz, B.: (1,1,2,2-Tetrabromoethane-determination method). *Podstawy Metody Oceny Srodowiska Pr.,* 16, No. 3 (2000) 144-148; *C.A.*, 134 (2001) 370914r.

1665 Russo, M.V. and Avino, P.: Determination of 1,2,4- and 1,3,5-trichlorobenzenes in water samples by solid-phase extraction and gas chromatography coupled to electron capture. *Anal. Lett.,* 34 (2001) 1003-1013.

1666 Shurygina, G.A.: (Gas chromatographic determination of chloroform in drinking water). *Neftepererab. Neftekhim. (Moscow),* No. 10 (2000) 35-36; *C.A.*, 135 (2001) 36825t.

1667 Sousa, S.R. and Bialkowski, S.E.: Comparison of gas chromatography detection limits and relative response of common alternative fluorocarbons using electron capture, atomic emission, and mass spectrometry detection. *Anal. Chim. Acta,* 433 (2001) 181-186.

1668 Sun, Y.: (Determination of trace ethylene dichloride by gas chromatography). *Guangxi Huagong,* 30 (2001) 27-29,46; CA Selects Plus GC, No. 13 (2001) 412333.

1669 Thomsen, C., Leknes, H., Lundanes, E. and Becher, G.: Brominated flame retardants in laboratory air. *J. Chromatogr. A,* 923 (2001) 299-304.

1670 Yablochkin, V.D. and Kurpel, V.V.: (Detection of chlorinated hydrocarbons in putrefactive biological material). *Sud.-Med. Ekspert.,* 44 (2001) 28-30; *C.A.*, 134 (2001) 306274e.

See also 1597, 1674, 1706, 1707, 1879, 1890, 2042, 2052, 2053.

5d. Complex hydrocarbon mixtures (incl. analysis of tars, bitumens and mineral oils)

1671 Kube, C., Morick, K. and Zirkler, W.: (Determining mineral oil hydrocarbons in sewage sludge). *Wasser Abfall (Wiesbaden),* 3, No. 5 (2001) 62-66; *C.A.,* 135 (2001) 111416r.

1672 Mangani, F., Berloni, A., Cangiotti, M., Lattanzi, L. and Maione, M.: Analysis of volatile aromatic compounds in heavy fuel oils using purge and trap extraction and a gas chromatographic-mass spectrometric technique. *Anal. Lett.,* 34 (2001) 1023-1032.

1673 Shcherbakov, P.M.: (Azeotropic mixtures of petroleum hydrocarbons). *Gazov. Prom-st.,* No. 13 (2000) 15-16; *C.A.,* 134 (2001) 313295r.

1674 Tranthim-Fryer, D.J., Hansson, R.C. and Norman, K.W.: Headspace/solid-phase microextraction/gas chromatography-mass spectrometry: a screening technique for the recovery and identification of volatile organic compounds (VOC's) in *postmortem* blood and viscera samples. *J. Forensic Sci.,* 46 (2001) 934-946.

1675 Yin, C.-s., Guo, W.-m., Liu, W., Zhao, W. and Pan, Z.-x.: Estimation and prediction of gas chromatography retention indices of hydrocarbons in straight-run gasoline by using artificial neural network and structural coding method. *Chem. Res. Chin. Univ.,* 17 (2001) 31-40; CA Selects Plus GC, No. 12 (2001) 360678.

6. ALCOHOLS

1676 Biber, E., Demczak, M. and Iwasyk, Z.: (Gas chromatographic determination of glycol in natural gas). *Nafta-Gaz,* 57 (2001) 197-208; CA Selects Plus GC, No. 16 (2001) 519521.

1677 Gao, H., Chen, F. and Han, X.: (Analysis of mixture of 1,3-difluoro-2-propanol and 1-fluoro-3-chloro-2-propanol by GC). *Zhongguo Gonggong Weisheng,* 16 (2000) 219; *C.A.,* 135 (2001) 28484r.

1678 Gao, Y., Zhang, Y. and Zhang, G.: (Determination of cyclohexanol in air by GC). *Zhongguo Gonggong Weisheng,* 16 (2000) 243-244; *C.A.,* 135 (2001) 23635f.

1679 Ghanem, A. and Schurig, V.: Lipase-catalyzed irreversible transesterification of 1-(2-furyl)ethanol using isopropenyl acetate. *Chirality,* 13 (2001) 118-123.

1680 Kucharska, M. and Wesolowski, W.: (1-(2-Methoxy-1-methylethoxy)propane-2-ol-determination method). *Podstawy Metody Oceny Srodowiska Pr.,* 16, No. 3 (2000) 103-108; *C.A.,* 134 (2001) 370906q.

1681 Miazek-Kula, M.: (2-Chloroethanol-determination method). *Podstawy Metody Oceny Srodowiska Pr.,* 16, No. 3 (2000) 50-53; *C.A.,* 134 (2001) 370897n.

1682 Naviglio, D., Ramano, R. and Attanasio, G.: (Rapid determination of ethanol content in spirits and in beer by high resolution gas chromatography). *Ind. Bevande,* 30, No. 172 (2001) 113-115; CA Selects Plus GC, No. 14 (2001) 442927.

1683 Peskova, J., Parizek, P. and Vecera, Z.: Wet effluent diffusion technique and determination of C_1-C_5 alcohols in air. *Chem. Inz. Ekol.,* 8 (2001) 121-127; *C.A.,* 135 (2001) 36386a.

1684 Romanowicz, B.: (Phenylmethanol-determination method). *Podstawy Metody Oceny Srodowiska Pr.,* 16, No. 3 (2000) 76-81; *C.A.,* 134 (2001) 370901j.

1685 Shurygina, G.A.: (Gas chromatographic determination of methanol in wastewater). *Neftepererab. Neftekhim. (Moscow),* No. 4 (2000) 38-39; *C.A.,* 135 (2001) 36824s.

1686 Xiao, Y., Li, P., Zhang, Y., Wang, D., Chen, W. and Na, X.: (Rapid determination of ethanol in whole blood by liquid top phase GC). *Zhongguo Gonggong Weisheng,* 16 (2000) 80-81; *C.A.,* 135 (2001) 29979t.

1687 Yuan, X. and Zhou, H.: (Determination of benzyl alcohol in cosmetics by GC). *Zhongguo Gonggong Weisheng,* 16 (2000) 322; *C.A.,* 135 (2001) 9808h.

See also 1722.

7. PHENOLS

1688 Czaplicka, M.: Determination of phenols and chlorophenols in bottom sediments. *Chromatographia,* 53(Suppl.) (2001) S470-S473.

1689 Diserens, J.-M.: Rapid determination of nineteen chlorophenols in wood, paper, cardboard, fruits, and fruit juices by gas chromatography/mass spectrometry. *J. Assoc. Off. Anal. Chem. Int.,* 84 (2001) 853-860.

1690 Huang, Q.: (Determination of phenols in water). *Guangdong Huagong,* 28 (2001) 48-50; *C.A.,* 134 (2001) 344181e.

1691 Imanaka, M., Sasaki, K., Nemoto, S., Ueda, E., Murakami, E., Miyata, D. and Tonogai, Y.: (Determination of bisphenol A in foods using GC/MS). *Shokuhin Eiseigaku Zasshi,* 42, No. 2 (2001)71-78; *C.A.,* 134 (2001) 365909p.

1692 Jiang, H. and Tang, Y.: (Determination of hydroquinone in cosmetics by GC-MS). *Wiesheng Yanjiu,* 30 (2001) 22; *C.A.,* 134 (2001) 331338m.

1693 Korenman, Y.I., Gruzdev, I.V. and Kondratenok, B.M.: Identification and determination of chlorophenols in potable water by a kinetic gas-chromatographic method. *J. Anal. Chem.,* 56 (2001) 507-511.

1694 Li, D., Park, J. and Oh, J.-R.: Silyl derivatization of alkylphenols, chlorophenols, and bisphenol A for simultaneous GC/MS determination. *Anal. Chem.,* 73 (2001) 3089-3095.

1695 Li, Q., Fang, C., Yu, F., Zhang, G., Wang, L. and Sun, Y.: (Determination of content of syingic phenol in Erfukang by gas chromatography). *Huaxue Fenxi Jiliang,* 9, No. 2 (2000) 20-21; CA Selects Plus GC, No. 11 (2001) 340714.

1696 Miro-Casas, E., Farre Albaladejo, M., Covas, M.-I., Rodriguez, J.O., Menoyo, C.E., Lamuela, R.R.M. and de la Torre, R.: Capillary gas chromatography-mass spectrometry quantitative determination on hydroxytyrosol and tyrosol in human urine after olive oil intake. *Anal. Biochem.,* 294 (2001) 63-72.

1697 Nakamura, S., Takino, M. and Daishima, S.: Trace level determination of phenols as pentafluorobenzyl derivatives by gas chromatography-negative ion chemical ionization mass spectrometry. *Analyst (Cambridge),* 126 (2001) 835-839.

1698 Nakanishi, S. and Hino, T.: (Determination od selected phenols in water by solid-phase extraction and gas chromatography/mass spectrometry). *Chiba-ken Eisei Kenkyusho Kenkyu Hokoku,* 24 (2000) 16-21; CA Selects Plus GC, No. 11 (2001) 306949.

1699 Rolfes, J. and Andersson, J.T.: Determination of alkylphenols after derivatization to ferrocenecarboxylic acid esters with gas chromatography-atomic emission detection. *Anal. Chem.*, 73 (2001) 3073-3082.

1700 Zhao, Q.-y. and Yue, Z.-x.: (Determination of phenolic compounds in phenolic tar by gas chromatography). *Shiyou Huagong*, 30 (2001) 305-307; CA Selects Plus GC, No. 11 (2001) 334603.

1701 Zhou, H. and Zhang, X.: (GC determination of phenol in cosmetics). *Zhongguo Gonggong Weisheng*, 16 (2000) 718; *C.A.*, 135 (2001) 28486t.

See also 2004, 2042, 2055.

8. SUBSTANCES CONTAINING HETEROCYCLIC OXYGEN

8a. Flavonoids

1702 Branco, A., dos Santos Pereira, A., Cardoso, J.N., de Aquino Neto, F.R., Pinto, A.C. and Braz-Filho, R.: Further lipophilic flavonols in *Vellozia graminifolia* (Velloziaceae) by high temperature gas chromatography: quick detection of new compounds. *Phytochem. Anal.*, 12 (2001) 266-270; CA Selects Plus GC, No. 17 (2001) 549504.

8b. Aflatoxins and other mycotoxins

1703 Eskola, M., Boonzaaijer, G., van Osenbruggen, W.A., Rizzo, A. and Tijmensen, G.: A study of the suitability of gas chromatography-electron capture detection for the analysis of deoxynivalenol in cereals. *Mycotoxin Res.*, 16, No. 2 (2000) 73-90; CA Selects Plus GC, No. 16 (2001) 513778.

1704 Wen, Z., Yang, Z. and Song, Y.: (Gas chromatography for detecting three kinds of fusarium mycotoxin in grains). *Quingdao Daxue Yixueyuan Xuebao*, 37 (2001) 35-36; CA Selects Plus GC, No. 15 (2001) 468900.

8c. Other compounds with heterocyclic oxygen (incl. tannins)

1705 Focant, J.-F., Eppe, G. and de Pauw, E.: Optimisation and use of tandem-in-time mass spectrometry in comparison with immunoassay and HRGC/HRMS for PCDD/F screening. *Chemosphere*, 43 (2001) 417-424.

1706 Focant, J.-F., Eppe, G., Pirard, C. and de Pauw, E.: Fast clean-up for polychlorinated dibenzo-*p*-dioxins, dibenzofurans and coplanar polychlorinated biphenyls analysis of high-fat-content biological samples. *J. Chromatogr. A*, 925 (2001) 207-221.

1707 Grochowalski, A. and Chrzaszcz, R.: The result of the large scale determination of PCDDs, PCDFs and coplanar PCBs in Polish food product samples using GC-MS/MS technique. *Organohalogen Compd.*, 47 (2000) 310-313.

1708 Helen, C., Lemasle, M., Laplanche, A. and Genin, E.: Determination of polychlorodibenzo-*p*-dioxins and polychlorodibenzofurans by gas chromatography/tandem mass spectrometry and gas chromatography/triple mass spectrometry in a quadrupole ion trap. *J. Mass Spectrom.*, 36 (2001) 546-554.

1709 Jiang, H.S., Guan, D.-W., Liu, L.-Q. and Zhang, Q.-S.: (Limit test of dioxane in nonoxinol). *Zhongguo Yiyao Gongye Zazhi*, 31 (2000) 413-414; *C.A.*, 134 (2001) 321691g.

1710 Liu, X., Wu, H., Xu, G.-w., Guan, A.-m., Zhao, X.-j., Song, Y.-j., Zhang, T.-f. and Liu, B.: (Development of a gas chromatographic column system for the on-line analysis of trace tetrahydrofuran in hexane). *Sepu*, 19 (2001) 196-199.

1711 Mishima, K., Kashima, N. and Kubota, N.: Method for separating or measuring dioxins by supercritical fluid chromatography. *Jpn. Kokai Tokkyo Koho* JP 2001 141,712 (Cl. G01N30/88), 25 May 2001, Appl. 1999/320,825, 11 Nov. 1999; 7 pp.; *C.A.*, 134 (2001) 363652a.

1712 Nawrocki, J., Andrzejewski, P., Jelen, H. and Wasowicz, E.: Derivatization of the mutagen MX (3-chloro-4-(dichloromethyl)-5-hydroxy-2(5H)-furanone) with butyl alcohols prior to GC-MS analysis. *Water Res.*, 35 (2001) 1891-1896.

1713 Pundlik, M.D., Sitharaman, B. and Kaur, I.: Gas chromatographic determination of 1,4-dioxane in benzene. *J. Sci. Ind. Res.*, 60 (2001) 401-404; CA Selects Plus GC, No. 13 (2001) 400449.

1714 Urano, K., Kato, M., Nagayanagi, Y., Saito, Y., Aono, A., Nagata, J. and Syudo, H.: Convenient dioxin measuring method using an efficient sampling train, an efficient HPLC system and a highly sensitive HRGC/LRMS with a PTV injector. *Chemosphere*, 43 (2001) 425-431.

9. OXO COMPOUNDS, ETHERS, EPOXIDES AND QUINONES

1715 Alaee, M., Sergeant, D.B., Ikonomou, M.G. and Luross, J.M.: A gas chromatography/high-resolution mass spectrometry (GC/HRMS) method for determination of polybrominated diphenyl ethers in fish. *Chemosphere*, 44 (2001) 1489-1495.

1716 Black, R.E., Hurley, F.J. and Havery, D.C.: Occurence of 1,4-dioxane in cosmetic raw materials and finished cosmetic products. *J. Assoc. Off. Anal. Chem. Int.*, 84 (2001) 666-670.

1717 Careri, M., Mazzoleni, V., Musci, M. and Molteni, R.: Study of electron beam irradiation effects on 2,4,6-trichloroanisole as a contaminant of cork by gas chromatography-mass spectrometry. *Chromatographia*, 53 (2001) 553-557.

1718 Casana-Giner, V., Oliver, J.E., Thibout, E. and Auger, J.: On the pheromone of the Asparagus fly, *Platyparea poeciloptera*. *J. Chromatogr. A*, 921 (2001) 341-342.

1719 Cecinato, A., di Palo, V., Mabilia, R. and Possanzini, M.: Pentafluorophenylhydrazine as a coating reagent for the HRGC-MS determination of semi-volatile carbonyl compounds in air. *Chromatographia*, 54 (2001) 263-269.

1720 Fenaille, F., Mottier, P., Turesky, R.J., Ali, S. and Guy, P.A.: Comparison of analytical techniques to quantify malondialdehyde in milk powders. *J. Chromatogr. A*, 921 (2001) 237-245.

1721 Kalina, A.: (Formaldehyde-method for determination with passive samples). *Podstawy Metody Oceny Srodowiska Pr.*, 16, No. 3 (2000) 87-92; *C.A.*, 134 (2001) 370903m.

1722 Knupp, V.F., Idemori, Y.M. and Cardeal, Z.L.: A headspace gas chromatographic method for the analysis of cyclohexanone and cyclohexanol in a system involving metalloporphyrins as catalyst. *Chromatographia*, 53 (2001) 529-533.

1723 Koziel, E. and Hibner, Z.: (2-Methylcyclohexane-determination method). *Podstawy Metody Oceny Srodowiska Pr.*, 16, No. 3 (2000) 109-113; *C.A.*, 134 (2001) 370907r.

1724 Ledea, O., Escobar, M., Rosado, A., Correa, T., Jardines, D. and Molerio, J.: (Determination of the polar compounds in Oleozon). *Rev. CENIC, Cienc. Quim.*, 31 (2000) 195-202; *C.A.*, 135 (2001) 37254t.

1725 Miazek-Kula, M.: (Acetaldehyde-determination method). *Podstawy Metody Oceny Srodowiska Pr.*, 16, No. 3 (2000) 20-24; *C.A.*, 134 (2001) 370891f.

1726 Nicol, S., Dugay, J. and Hennion, M.-C.: Determination of oxygenated polycyclic aromatic compounds in airborne particulate organic matter using gas chromatography-tandem mass spectrometry. *Chromatographia*, 53(Suppl.) (2001) S464-S469.

1727 Piazza, F., Barbieri, A., Saverio Violante, F. and Roda, A.: A rapid and sensitive method for methyl *tert.*-butyl ether analysis in water samples by use of solid phase microextraction and gas chromatography-mass spectrometry. *Chemosphere*, 44 (2001) 539-544.

1728 Rao, X., Kobayashi, R., White-Morris, R., Spaulding, R., Frazey, P. and Charles, M.J.: GC/ITMS measurements of carbonyls and multifunctional carbonyls in $PM_{2.5}$ particles emitted from motor vehicles. *J. Assoc. Off. Anal. Chem. Int.*, 84 (2001) 699-705.

1729 Shen, W., Liu, J.-w. and Wang, G.-x.: (GC analysis of *p*-bromobenzaldehyde in electrosynthesis). *Jingxi Huagong*, 18 (2001) 181-182,185; *C.A.*, 134 (2001) 360807u.

1730 Shi, J.-h., Wang, S.-l. and Zhu, W.-m.: (Determination of 3-bromo-4-hydroxybenzaldehyde by gas chromatography). *Zhejiang Gongye Daxue Xuebao*, 28 (2000) 58-60,67; CA Selects Plus GC, No. 14 (2001) 460288.

1731 Stewart, E.M., McRoberts, W.C., Hamilton, J.T.G. and Graham, W.D.: Isolation of lipid and 2-alkylcyclobutanones from irradiated foods by supercritical fluid extraction. *J. Assoc. Off. Anal. Chem. Int.*, 84 (2001) 976-986.

1732 Takamoto, S., Sakura, N., Yashiki, M. and Kojima, T.: Determination of acrolein by headspace solid-phase microextraction gas chromatography and mass spectrometry. *J. Chromatogr. B*, 758 (2001) 123-128.

1733 Wang, Y.-x., Li, L.-s., Liu, X.-l. and Wu, Y.-m.: (Determination of cinnamaldehyde in cassia bark capsule by gas chromatography). *Jiangxi Shifan Daxue Xuebao, Ziran Kexueban*, 25 (2001) 155-156,165; CA Selects Plus GC, No. 15 (2001) 496759.

1734 Wroblewska-Jakubowska, K.: (3-Heptanone-determination

1737 Moreno, F.J., Villamiel, M., López-Fandiño, R. and Olano, A.: Analysis of monosaccharides in bovine, caprine and ovine κ-casein macropeptide by gas chromatography. *Chromatographia*, 53 (2001) 525-528.

1738 Nag, K., Alam, A.H.M., Sultana, N., Das, S.C., Biswas, S.C. and Roy, J.: Analysis of lactulose preparation using gas chromatography. *Indian Drugs*, 38, No. 2 (2001) 104-105; CA Selects Plus GC, No. 14 (2001) 434732.

1739 Pitthard, V. and Finch, P.: GC-MS analysis of monosaccharide mixtures as their diethylthioacetal derivatives: application to plant gums used in art works. *Chromatographia*, 53(Suppl.) (2001) S317-S321.

10b. Polysaccharides, mucopolysaccharides, lipopolysaccharides

1740 Dobele, G., Meier, D., Faix, O., Radtke, S., Rossinskaja, G. and Telysheva, G.: Volatile products of catalytic flash pyrolysis of celluloses. *J. Anal. Appl. Pyrolysis*, 58-59 (2001) 453-463.

11. ORGANIC ACIDS AND LIPIDS

11a. Organic acids and simple esters

1741 Bao, Z., Xu, R. and Xu, J.: (Determination of dehydroacetic acid, sorbic acid and benzoic acid in food by gas chromatography internal standard method). *Shipin Gongye Keji*, 22, No. 2 (2001) 78-79; CA Selects Plus GC, No. 14 (2001) 443453.

1742 Borruat, G., Roten, C.-A.H., Marchant, R., Fay, L.-B. and Karamata, D.: Chromatographic method for diaminopimelic acid detection in calcareous rocks. Presence of a bacterial biomarker in stromatolites. *J. Chromatogr. A*, 922 (2001) 219-224.

1743 Chen, A. and Wang, Z.: (Determination of ethyl acetate, ethyl caproate and ethyl lactate by capillary GC). *Zhongguo Gonggong Weisheng*, 16 (2000) 834-835; *C.A.*, 135 (2001) 13646w.

1744 Chen, W. and Peng, X.: (Determination of phthalate plasticizer contamination in imported powdered milk by capillary GC). *Zhongguo Gonggong Weisheng*, 16 (2000) 636; *C.A.*, 135

13c. Estrogens

1774 Bohmer, W. and Kurzawa, B.: (Determination of 17α-ethynylestradiol by GC-MS-MS after solid-phase extraction using Empore disks). *GIT Labor-Fachz.,* 45 (2001) 57-59; *C.A.,* 134 (2001) 315718e.

1775 Cathum, S. and Sabik, H.: Determination of steroids and coprostanol in surface water, effluent and mussel using gas chromatography-mass spectrometry. *Chromatographia,* 53(Suppl.) (2001) S394-S399.

1776 De la Torre, X., Gonzalez, J.C., Pichini, S., Pascual, J.A. and Segura, J.: $^{13}C/^{12}C$ isotope ratio MS analysis of testosterone, in chemicals and pharmaceutical preparations. *J. Pharm. Biomed. Anal.,* 24 (2001) 645-650.

1777 Pinnella, K.D., Cranmer, B.K., Tessari, J.D., Cosma, G.N. and Veeramachaneni, D.N.R.: Gas chromatographic determination of catecholestrogens following isolation by solid-phase extraction. *J. Chromatogr. B,* 758 (2001) 145-152.

1778 Wang, J., Hu, J. and Li, J.: (Assay for conjugated estrogens in premarin for injection and premarin cream using GC-FID by trimethylsilylating). *Yaowu Fenxi Zazhi,* 21 (2001) 18-21; *C.A.,* 135 (2001) 66328a.

1779 Xiao, X.-Y., McCalley, D.V. and McEvoy, J.: Analysis of estrogens in river water and effluents using solid-phase extraction and gas chromatography-negative chemical ionisation mass spectometry of the pentafluorobenzoyl derivatives. *J. Chromatogr. A,* 923 (2001) 195-204.

13d. Sterols

1780 Ebrahimzadeh, H., Niknam, V. and Maassoumi, A.A.: The sterols of Astragalus species from Iran: GLC separation and quantification. *Biochem. Syst. Ecol.,* 29 (2001) 393-404; *C.A.,* 134 (2001) 350665g.

1781 Gremaud, G., Piguet, C., Baumgartner, M., Pouteau, E., Decarli, B., Berger, A. and Fay, L.B.: Simultaneous assessment of cholesterol absorption and synthesis in humans using on-line gas chromatography/combustion and gas chromatography/pyrolysis/isotope-ratio mass spectrometry. *Rapid Commun. Mass Spectrom.,* 15 (2001) 1207-1213.

See also 1782.

13e. Bile acids and alcohols

1782 Chaler, R., Simoneit, B.R.T. and Grimalt, J.O.: Bile acids and sterols in urban sewage treatment plants. *J. Chromatogr. A,* 927 (2001) 155-160.

15. TERPENES AND OTHER VOLATILE AROMATIC COMPOUNDS

15a. Terpenes

1783 Choong, Y.-M. and Lin, H.-J.: A rapid and simple gas chromatographic method for direct determination of safrole in soft drinks. *Yaowu Shipin Fenxi,* 9 (2001) 27-32; CA Selects Plus GC, No. 15 (2001) 463955.

1784 Da Silva, M.D.R.G., Mateus, E.P., Munhá, J., Drazyk, A., Farrall, M.H., Paiva, M.R., das Neves, H.J.C. and Mosandl, A.: Differentiation of ten pine species from central Portugal by monoterpene enantiomer-selective composition analysis using multidimensional gas chromatography. *Chromatographia,* 53(Suppl.) (2001) S412-S416.

1785 Holubova, V., Hrdlicka, P. and Kuban, V.: Age and space distributions of monoterpenes in fresh needles of *Picea abies* (L) Karst. determined by gas chromatography-mass spectrometry. *Phytochem. Anal.,* 12 (2001) 243-249; CA Selects Plus GC, No. 17 (2001) 549500.

1786 Hudaib, M., Bellardi, M.G., Rubies-Autonell, C., Fiori, J. and Cavrini, V.: Chromatographic (GC-MS, HPLC) and virological evaluations of *Salvia sclarea* infected by BBWV-I. *Farmaco,* 56 (2001) 219-227; CA Selects Plus GC, No. 16 (2001) 516919.

1787 Nishimura, O.: Enantiomer separation of the characteristic odorants in Japanese fresh rhizomes of *Zingiber officinale* Roscoe (ginger) using multidimensional GC system and confirmation of the odour character of each enantiomer by GC-olfactometry. *Flavour Fragrance J.,* 16 (2001) 13-18; *C.A.,* 135 (2001) 91749w.

15b. Essential oils

1788 An, Q.-r. and Guo, Z.-f.: (Analysis of the volatile oil from *Mentha haplocalyx* Briq. in spring and autumn by GC-MS). *Fenxi Ceshi Xuebao,* 19, No. 5 (2000) 64-66; *C.A.,* 134 (2001) 357350j.

1789 Heikes, D.L., Scott, B. and Gorzovalitis, N.A.: Quantitation of volatile oils in ground cumin by supercritical fluid extraction and gas chromatography with flame ionization detection. *J. Assoc. Off. Anal. Chem. Soc.,* 84 (2001) 1130-1134.

1790 Jirovetz, L., Buchbauer, G., Puschmann, C. and Ngassoum, M.B.: Investigation of aromatic plants from Cameroon: analysis of the essential oils of flowers of *Hyptis spicigera* (Linn.) Poit. by GC, GC/MS and olfactometry. *J. Essent. Oil-Bear. Plants,* 3, No. 2 (2000) 71-77; *C.A.,* 134 (2001) 364104k.

1791 Jirovetz, L., Buchbauer, G., Shafi, P.M., Rosamma, M.K. and Geissler, M.: Analysis of the composition and aroma of the essential leaf oil of *Syzygium travancoricum* from south India by GC-FID, GC-MS, and olfactometry. Seasonal changes of composition. *Chromatographia,* 53(Suppl.) (2001) S372-S374.

1792 Kim, K.H. and Hong, J.: Desorption kinetic model for supercritical fluid extraction of spearmint leaf oil. *Separ. Sci. Technol.,* 36 (2001) 1437-1450.

1793 Li, B., An, Q. and Guo, Z.: (Identification of isomer of volatile oils in peppermint leaves and its stalks by gas chromatography-mass spectrometry). *Fenxi Huaxue,* 29 (2001) 530-533; CA Selects Plus GC, No. 13 (2001) 412440.

1794 Li, L., Lai, D. and Ye, F.: (Ocimum oil analysis by GC and GC/MS). *Fujian Fenxi Ceshi,* 9 (2000) 1222-1227; *C.A.,* 135 (2001) 111680x.

1795 Liu, T., Qiu, Q. and Zhao, Y.: (Study on chemical constituents of essential oil from *Citrus aurantium* "daidai" by GC-MS). *Zhongguo Yaowu Huaxue Zazhi,* 10 (2000) 270-272; *C.A.,* 135 (2001) 36927c.

1796 Mandal, S., Dwivedi, P.D., Singh, A., Naqvi, A.A. and Bagchi, G.D.: Capillary gas chromatographic analyis of *Eucalyptus globulus* from different geoclimatic zones in India. *J. Essent. Oil Res.*, 13 (2001) 196-197; CA Selects Plus GC, No. 14 (2001) 452452.

1797 Palá-Paul, J., Velasco-Negueruela, A., Pérez-Alonso, M.J. and Sanz, J.: Analysis of the volatile components of *Argyranthemum adauctum* (Link.). Humphries by gas chromatography-mass spectrometry. *J. Chromatogr. A*, 923 (2001) 295-298.

1798 Palmeira, S.F.,Jr., Conserva, L.M., de A. Andrade, E.H. and Guilhon, G.M.S.P.: Analysis by GC-MS of the hexane extract of the aerial parts of *Aristolochia acutifolia* Duchtr. *Flavour Fragrance J.*, 16, No. 2 (2001) 85-88; *C.A.*, 135 (2001) 73996v.

1799 Qiu, Q., Liu, T., Zhao, Y. and Zhao, W.: (GC-MS determination of various constituents in *Kaempferia galanga* L.) *Lihua Jianyan, Huaxue Fence*, 36 (2000) 294-298; *C.A.*, 134 (2001) 331426p.

1800 Singh, G., Kapoor, I.P.S., Pandey, S.K., Singh, O.P., Leclereq, P.A. and Sperkova, J.: Studies of essential oils, part 24: GC-MS analysis of leaf oil of Ageratum conyzoides L. from North India. *J. Essent. Oil-Bear. Plants*, 3 (2000) 85-90; *C.A.*, 135 (2001) 16744n.

1801 Wang, Y., Wang, J., You, H. and Cui, Y.: (Analysis of essential oil from seeds of *Schisandra chinensis* by GC-MS). *Zhongguo Yaoxue Zazhi (Beijing, China)*, 36, No. 2 (2001) 91-92; *C.A.*, 135 (2001) 111679d.

1802 Zhao, Q., Wang, S., Hou, Z. and Wang, X.: (Studies of components of essential oil of *Artemisia sphaerocephala* Krasch). *Lanzhou Daxue Xuebao, Ziran Kexueban*, 36, No. 4 (2000) 45-49; *C.A.*, 134 (2001) 357462x.

See also 1520, 1563, 1702.

16. NITRO AND NITROSO COMPOUNDS

1803 Bladek, J., Neffe, S., Rostkowski, A. and Zdrojewski, A.: Evaluation of the degree of environmental pollution in regions used by an army. Part I. Studies of explosive residues. *Biul. Wojsk. Akad. Tech.*, 49, No. 11 (2000) 67-81; *C.A.*, 134 (2001) 335828u.

1804 Kleps, T., Parys, T. and Piaskiewicz, M.: (Gas chromatography/thermal energy analysis (GC/TEA) technique for selective determination and monitoring of N-nitrosamines released from rubber articles which complies with requirements of European standards). *Elastomery*, 5 (2001) 35-39; CA Selects Plus GC, No. 14 (2001) 432023.

1805 Posniak, M.: Air sampling and gas-chromatographic determination of chlorodinitrobenzene isomers in the working environment. *Acta Chromatogr.*, 11 (2001) 224-232; CA Selects Plus GC, No. 16 (2001) 533198.

1806 Sigman, M.E. and Ma, C.-Y.: Detection limits for GC/MS analysis of organic explosives. *J. Forensic Sci.*, 46 (2001) 6-11.

17. AMINES, AMIDES AND RELATED NITROGEN COMPOUNDS

17d. Other amine derivatives and amides (excl. peptides)

1807 Borth, S., Hansel, W., Rosner, P. and Junge, T.: Synthesis of 2,3- and 3,4-methylenedioxyphenylalkylamines and their regioisomeric differentiation by mass spectral analysis using GC-MS-MS. *Forensic Sci. Int.*, 114, No. 3 (2000) 139-153.

1808 De Zeeuw, J., Vonk, N., Buyten, J., Heijnsdijk, P., Clarisse, R. and Kettner, L.: (Analysis of volatile amines via capillary GC). *LaborPraxis*, 25, No. 3 (2001) 48-50; *C.A.*, 134 (2001) 304775v.

1809 Hu, C. and Xu, Z.: (Determination of trimethylamine in pork, fish and shrimp by gas chromatography). *Shipin Kexue (Beijing)*, 22, No. 5 (2001) 62-64; CA Selects Plus GC, No. 14 (2001) 461411.

1810 Jin, L. and Yu, K.: (GC determination of trimethylamine in meat after bubbling separation). *Zhongguo Gonggong Weisheng*, 16 (2000) 548-549; *C.A.*, 135 (2001) 4664y.

1811 Madej, M. and Jezewska, A.: (Acrylonitrile-determination method). *Podstawy Metody Oceny Srodowiska Pr.*, 16, No. 3 (2000) 25-29; *C.A.*, 134 (2001) 370892g.

1812 Shi, J.-h. and Shan, W.-g.: (Separation and determination of 2-chloro-N-phenyl propanamide by gas chromatography). *Zhejiang Gongye Daxue Xuebao*, 28 (2000) 250-252; CA Selects Plus GC, No. 14 (2001) 460247.

See also 1572, 2005.

18. AMINO ACIDS AND PEPTIDES; CHEMICAL STRUCTURE OF PROTEINS

18a. Amino acids and their derivatives

1813 Amelung, W. and Zhang, X.: Determination of amino acid enantiomers in soils. *Soil Biol. Biochem.*, 33 (2001) 553-562; *C.A.*, 135 (2001) 18960d.

1814 Basiuk, V.A. and Douda, J.: Analysis of less-volatile products of poly-1-valine pyrolysis by gas chromatography/Fourier transform infrared spectroscopy/mass spectrometry. *J. Anal. Appl. Pyrolysis*, 60 (2001) 27-40.

1815 Brückner, H. and Schieber, A.: Determination of amino acid enantiomers in human urine and blood serum by gas chromatography-mass spectrometry. *Biomed. Chromatogr.*, 15 (2001) 166-172.

1816 Chiavari, G., Fabbri, D. and Prati, S.: Gas chromatographic-mass spectrometric analysis of products arising from pyrolysis of amino acids in the presence of hexamethyldisilazane. *J. Chromatogr. A*, 922 (2001) 235-241.

1817 Mamer, O.A.: Initial catabolic steps of isoleucine, the R-pathway and the origin of alloisoleucine. *J. Chromatogr. B*, 758 (2001) 49-55 - a review with 25 refs.

1818 Rodier, C., Vandenabeele-Trambouze, O., Sternberg, R., Coscia, D., Coll, P., Szopa, C., Raulin, F., Vidal-Madjar, C., Cabane, M., Israel, G., Grenier-Loustalot, M.F., Dobrijevic, M. and Despois, D.: Detection of martian amino acids by chemical derivatization coupled to gas chromatography: in situ and laboratory analysis. *Adv. Space Res.*, 27 (2001) 195-199; CA Selects Plus GC, No. 16 (2001) 511252.

1819 Shinohara, Y., Hasegawa, H., Tagoku, K. and Hashimoto, T.: Simultaneous determination of methionine and total homocysteine in human plasma by gas chromatography-mass spectrometry. *J. Chromatogr. B,* 758 (2001) 283-288.

1820 Thiemann, W.H.-P. and Meierhenrich, U.: ESA mission ROSETTA will probe for chirality of cometary amino acids. *Origins Life Evol. Biosphere,* 31 (2001) 199-210; *C.A.,* 135 (2001) 73636c.

1821 Vandenabeele-Trambouze, O., Rodier, C., Dobrijevic, M., Despois, D., Sternberg, R., Vidal-Madjar, C., Grenier-Loustalot, M.F. and Raulin, F.: Identification of amino acids by capillary gas chromatography. Application to Martian samples. *Chromatographia,* 53(Suppl.) (2001) S332-S339.

20. ENZYMES AND ENZYME ACTIVITY ESTIMATION

20h. Isomerases

See 1679.

21. PURINES, PYRIMIDINES, NUCLEIC ACIDS AND THEIR CONSTITUENTS

21a. Purines, pyrimidines, nucleosides, nucleotides

1822 Carregaro, A.B., Woods, W.E., Tobin, T. and Queriroz-Neto, A.: Comparison of the quantification of caffeine in human plasma by gas chromatography and ELISA. *Braz. J. Med. Biol. Res.,* 34 (2001) 821-824; CA Selects Plus GC, No. 16 (2001) 536170.

1823 Culea, M., Palibroda, N., Chereches-Panta, P. and Nanulescu, M.: Comparison of isotopic dilution methods for determination of theophylline in the plasma and saliva of infant and children. *Chromatographia,* 53(Suppl.) (2001) S387-S389.

1824 Mei, S., Xu, G., Xing, J. and Wu, C.: Method for the analysis of 8-hydroxy-2'-deoxyguanosine in urine by gas chromatography. *Anal. Sci.,* 17 (2001) 779-781.

See also 1994.

21e. Structural studies on DNA and DNA mapping

1825 Van Eijk, M.J.T., Hogers, R.C.J. and Heijnen, L.: AFLP oligonucleotide amplification and MALDI-TOF, HPLC, or GC-MS detection. *PCT Int.* Appl. WO 01 49,882 (Cl. C12Q1/68), 12 Jul. 2001, EP Appl. 1999/204,614, 29 Dec. 1999; 72 pp.; *C.A.,* 135 (2001) 103337a.

22. ALKALOIDS

1826 Hansen, L.B.: A stable gas chromatography-mass spectrometry analysis system to characterize Ma Huang products found in health foods and supplements. *J. Pharm. Sci.,* 90 (2001) 943-948; CA Selects Plus GC, No. 16 (2001) 525003.

1827 Li, H., Lu, W. and Deng, L.: Study of distribution of nicotine in tobacco and filter tip in the process of pumping. *Huaxue Yanjiu Yu Yingyong,* 12 (2000) 680-682; *C.A.,* 134 (2001) 335824q.

See also 1966.

23. OTHER SUBSTANCES CONTAINING HETEROCYCLIC NITROGEN

23c. Indole derivatives and plant hormones (gibberelins)

1828 Xu, Q.-q., Fan, C.-f. and Du, L.-m.: (Rapid determination of gibberellic acid in plant tissue by gas chromatography with a wide-bore capillary column). *Fenxi Kexue Xuebao,* 16 (2000) 524; *C.A.,* 135 (2001) 89342q.

23d. Pyridine derivatives

1829 Hu, Y.: (Gas chromatographic determination of the purity of pyridine). *Qingdao Daxue Xuebao, Gongcheng Jishuban,* 16 (2001) 85-86; *C.A.,* 135 (2001) 40178b.

See also 1827.

23e. Other N-heterocyclic compounds

1830 Su, J.: (Determination of caprolactam content with wide-bore capillary gas chromatographic column). *Hecheng Xianwei Gongye,* 24, No. 3 (2001) 66-68; CA Selects Plus GC, No. 16 (2001) 518082.

1831 Zhao, Y.-y., Jing, Z.-z., Li, H.-p. and Zhang, H.-s.: The determination of impurities in caprolactam by capillary gas chromatography-mass spectrometry. *Microchem. J.,* 69 (2001) 213-217.

24. ORGANIC SULPHUR COMPOUNDS (INCL. GLUCOSINOLATES)

1832 Liu, C.H. and Ding, W.-H.: Determination of naphthalenesulfonic acid isomers by large-volume on-line derivatization and gas chromatography-mass spectrometry. *J. Chromatogr. A,* 926 (2001) 341-346.

1833 Logan, T.P., Graham, J.S., Martin, J.L., Zallnick, J.E., Jakubowski, E.M. and Braue, E.H.: Detection and measurement of sulfur mustard offgassing from the weanling pig following exposure to saturated sulfur mustard vapor. *J. Appl. Toxicol.,* 20(Suppl. 1) (2000) S199-S204; *C.A.,* 135 (2001) 72271t.

1834 Louati, A., Elleuch, B., Sandra, P., David, F., Saliot, A., Dagaut, J. and Oudot, J.: Identification of thiosteranes in contaminated marine sediments from the Mediterranean sea by capillary GC-MS and capillary GC-AED. *J. Microcolumn Separ.,* 13 (2001) 90-95.

1835 Mondy, N., Naudin, A., Christides, J.P., Mandon, N. and Auger, J.: Comparison of GC-MS and HPLC for the analysis of Allium volatiles. *Chromatographia,* 53(Suppl.) (2001) S356-S360.

1836 Wrobel, C.L.: Modeling total reduced sulfur and sulfur dioxide emissions from a kraft recovery boiler using an artificial neural network, and, investigating volatile organic compounds in an urban intermountain valley using a TD/GC/MS [thermal desorption-gas chromatography-mass spectrometry] methodology and instrinsic tracer molecules. Avail. *UMI,* Order No. DA9974233, 2000, 147 pp.; *C.A.,* 135 (2001) 23699e.

25. ORGANIC PHOSPHORUS COMPOUNDS (INCL. SUGAR PHOSPHATES)

1837 Carrick, W.A., Cooper, D.B. and Muir, B.: Retrospective identification of chemical warefare agents by high-temperature automatic thermal desorption-gas chromatography-mass spectrometry. *J. Chromatogr. A,* 925 (2001) 241-249.

1838 Fisher, A.J., Rosenstiel, T.N., Shirk, M.C. and Fall, R.: Nonradioactive assay for cellular dimethylallyl diphosphate. *Anal. Biochem.,* 292 (2001) 272-279.

1839 Jakubowski, E.M., Heykamp, L.S., Durst, H.D. and Thomson, S.A.: Preliminary studies in the formation of ethyl methylphosphonofluoridate from rat and human serum exposed to VX and treated with fluoride ion. *Anal. Lett.,* 34 (2001) 727-737.

1840 Li, J. and Ruan, J.: (Determination of soman and its metabolites). *Junshi Yixue Kexueyuan Yuankan,* 24 (2000) 229-231; *C.A.,* 135 (2001) 1282m - a review with 19 refs.

1841 Shi, J. and Yang, G.: (Determination of di-*n*-propyl phosphite by gas chromatography). *Fenxi Ceshi Xuebao,* 20 (2001) 61-63; CA Selects Plus GC, No. 12 (2001) 368553.

1842 Wang, S., Yao, E. and Liu, X.: (Analysis of tetrachloroethyl phosphate and its main impurity). *Nongyaoxue Xuebao,* 2 (2000) 94-96; *C.A.,* 134 (2001) 337091x.

1843 Yao, W., Liu, D., Li, J. and Luan, H.: (Study of GC-MS selected ion determination of Cyanex272 extractant). *Youse Jinshu,* 53 (2001) 35-37; *C.A.,* 135 (2001) 81714s.

See also 1635, 1973.

26. ORGANOMETALLIC AND RELATED COMPOUNDS

26a. Organometallic compounds

1844 Baena, J.R., Gallego, M., Valcárcel, M., Leenaers, J. and Adams, F.C.: Comparison of three coupled gas chromatographic detectors (MS, MIP-AES, ICP-TOFMS) for organolead speciation analysis. *Anal. Chem.,* 73 (2001) 3927-3934.

1845 Bruheim, I., Fooladi, E., Lundanes, E. and Greibrokk, T.: Purity testing of air-sensitive organometallic compounds by capillary supercritical fluid chromatography. *J. Microcolumn Separ.,* 13 (2001) 156-162.

1846 Demuth, N. and Heumann, K.G.: Validation of methylmercury determinations in aquatic systems by alkyl derivatization methods for GC analysis using ICP-IDMS. *Anal. Chem.,* 73 (2001) 4020-4027.

1847 Encinar, J.R., Villar, M.I.M., Santamaría, V.G., Alonso, J.I.G. and Sanz-Medel, A.: Simultaneous determination of mono-, di-, and tributyltin in sediments by isotope dilution analysis using gas chromatography-ICPMS. *Anal. Chem.,* 73 (2001) 3174-3180.

1848 Heisterkamp, M. and Adams, F.C.: Gas chromatography-inductively coupled plasma-time-of-flight mass spectrometry for the speciation analysis of organolead compounds in environmental water samples. *Fresenius J. Anal. Chem.,* 370 (2001) 597-605.

1849 Krupp, E.M., Pecheyran, C., Meffan-Main, S. and Donard, O.F.X.: Precise isotope-ratio measurements of lead species by capillary gas chromatography hyphenated to hexapole Multicollector ICP-MS. *Fresenius J. Anal. Chem.,* 370 (2001) 573-580.

1850 Krupp, E.M., Pecheyran, C., Pinaly, H., Motelica-Heino, M., Koller, D., Young, S.M.M., Brenner, I.B. and Donard, O.F.X.: Isotopic precision for a lead species ($PbEt_4$) using capillary gas chromatography coupled to inductively coupled plasma-multicollector mass spectormetry. *Spectrochim. Acta, Part B,* 56 (2001) 1233-1240; CA Selects Plus GC, No. 17 (2001) 559324.

1851 Schubert, P., Rosenberg, E. and Grasserbauer, M.: Optimization of a sample preparation procedure for the speciation of organotin compounds in sediment samples using GC-AED. *Int. J. Environ. Anal. Chem.,* 78 (2000) 185-204.

1852 Vercauteren, J., Péres, C., Devos, C., Sandra, P., Vanhaecke, F. and Moens, L.: Stir bar sorptive extraction for the determination of ppq-level tracers of organotin compounds in environmental samples with thermal desorption-capillary gas chromatography-ICP mass spectrometry. *Anal. Chem.,* 73 (2001) 1509-1514.

1853 Zhou, Q., Jiang, C. and Wu, D.: (Determination of organotin species in lard by gas chromatography with flame photometric detector and gas chromatography/mass spectrometry). *Fenxi Huaxue,* 29 (2001) 453-456; CA Selects Plus GC, No. 11 (2001) 332348.

See also 1568, 1859.

26b. Boranes, silanes and related non-metallic compounds

1854 Chatterjee, A., Shibata, Y., Yoneda, M., Banerjee, R., Uchida, M., Kon, H. and Morita, M.: Identification of volatile selenium compounds produced in the hydride generation system from organoselenium compounds. *Anal. Chem.,* 73 (2001) 3181-3186.

1855 Gomez-Ariza, J.L., Velasco-Arjona, A., Giraldez, I., Sanchez-Rodas, D. and Morales, E.: Coupling prevaporation-gas chromatography for speciation of volatile forms of selenium in sediments. *Int. J. Environ. Anal. Chem.,* 78 (2000) 427-440.

1856 Hu, B., Song, Y. and Zhang, Y.: (Determination of methanolysis products of CH_3-$SiHCl_2$ by GC-MS). *Huagong Shikan,* 15 (2001) 34-37; *C.A.,* 134 (2001) 347794t.

1857 Vailaya, A., Wang, T., Chen, Y. and Huffman, M.: Quantitative analysis of dimethyl titanocene by iodometric titration, gas chromatography and NMR. *J. Pharm. Biomed. Anal.,* 25 (2001) 577-588.

26c. Coordination compounds

1858 Khuhawar, M.Y., Memon, A.A. and Bhanger, M.I.: Capillary gas chromatographic determination of vanadium in rock samples using bis(acetylpivalylmethane)ethylenediimine as complexing agent. *J. Chem. Soc. Pak.,* 22 (2000) 267-270; CA Selects Plus GC, No. 12 (2001) 380051.

1859 Wang, S. and Wai, C.M.: (Separation of metal chelates and organometalic compounds by supercritical fluid chromatography). *Fenxi Huaxue,* 29 (2001) 725-730; CA Selects Plus GC, No. 15 (2001) 484471.

29. INSECTICIDES, PESTICIDES AND OTHER AGROCHEMICALS

29a. General techniques

1860 Albero, B., Sánchez-Brunete, C. and Tadeo, J.L.: Multiresidue determination of pesticides in honey by matrix solid-phase dispersion and gas chromatography with electron-capture detection. *J. Assoc. Off. Anal. Chem. Soc.,* 84 (2001) 1165-1171.

1861 Cho, J.H., Kim, D.H., Kim, H.S., Oh, M.H., Kang, I.H., Shim, Y.H., Hwang, W.K., Myung, S.W. and Choi, B.K.: Monitoring research for residual pesticides as endocrine disruptors in natural medicines (I). *Saengyak Hakhoechi,* 31 (2000) 455-458; *C.A.,* 135 (2001) 112117f.

1862 Gamón, M., Lleó, C., Ten, A. and Mocholí, F.: Multiresidue determination of pesticides in fruit and vegetables by gas chromatography/tandem mass spectrometry. *J. Assoc. Off. Anal. Chem. Soc.,* 84 (2001) 1209-1216.

1863 Hou, Y. and Hou, S.: (Application of capillary column gas chromatography in pesticide analysis). *Nongyao,* 40, No. 5 (2001) 1-5; CA Selects Plus GC, No. 15 (2001) 497641 - a review with 9 refs.

1864 Jeannot, R., Sabik, H., Amalric, L., Sauvard, E., Proulx, S. and Rondeau, B.: Ultra-trace analysis of pesticides by solid-phase extraction of surface water with Carbopack B cartridges, combined with large-volume injection in gas chromatography. *Chromatographia,* 54 (2001) 236-240.

1865 Jiménez, J.J., Bernal, J.L., del Nozal, M.J., Toribio, L. and Mayorga, A.L.: Use of deactivated fused-silica capillary precolumns in pesticide analysis by gas chromatography with electron-capture detection. *J. Chromatogr. A,* 919 (2001) 373-379.

1866 Kobayashi, S.: (Chromatographic method for determining low-molecular-weight compounds in food). *Jpn. Kokai Tokkyo Koho* JP 2001 108,663 (Cl. G01N30/12), 20 Apr. 2001, Appl. 1999/284,014, 5 Oct. 1999; 6 pp.; *C.A.,* 134 (2001) 294908z.

1867 Liu, F., Qian, C. and Jiang, S.: (SPE of 12 pesticides in water and their ion trap GC-MS analysis). *Nongyaoxue Xuebao,* 2 (2000) 89-93; *C.A.,* 134 (2001) 331225x.

1868 Majzik-Solymos, E., Visi, E., Károly, G., Beke-Berczi, B. and Györfi, L.: Comparison of extraction methods to monitor pesticide residues in surface water. *J. Chromatogr. Sci.,* 39 (2001) 325-331.

1869 Mastovska, K., Lehotay, S.J. and Hajslova, J.: Optimization and evaluation of low-pressure gas chromatography-mass spectrometry for the fast analysis of multiple pesticide residues in a food commodity. *J. Chromatogr. A,* 926 (2001) 291-308.

1870 Murayama, H., Mukai, H., Tanabe, A., Moriyama, N. and Kitayama, Y.: (Sensitive and selective determination of pesticides in air using a high-resolution gas chromatograph/high resolution mass spectrometer). *Bunseki Kagaku,* 50 (2001) 537-545.

1871 Nakamura, S., Ishiharajima, E. and Yotoriyama, M.: (Study on addition of analysis items to present simultaneous analysis method for pesticide residues). *Tochigi-ken Hoken Kankyo Senta Nenpo,* 5 (2000) 66-72; *C.A.,* 134 (2001) 325365b.

1872 Rosenblum, L., Hieber, T. and Morgan, J.: Determination of pesticides in composite dietary samples by gas chromatography/mass spectrometry in the selected ion monitoring mode by using a temperature-programmable large volume injector with preseparation column. *J. Assoc. Off. Anal. Chem. Int.,* 84 (2001) 891-900.

1873 Sartori, G., Viale, G., Mello, F. and Acerbi, M.: (Proposal of the use of an internal standard and surrogate compounds in gas chromatographic analysis of pesticide residues in fruits and vegetables). *Boll. Chim. Ig., Parte Sci.,* 52, No. S2 (2001) 45-50; CA Selects Plus GC, No. 16 (2001) 527602.

1874 Volante, M., Galarini, R., Miano, V., Cattaneo, M., Pecorelli, I., Bianchi, M., Marinoni, M.T., Cossignani, L. and Damiani, P.: A SPME-GC-MS approach for antivarroa and pesticide residues analysis in honey. *Chromatographia,* 54 (2001) 241-246.

1875 Watanabe, T.: Determination of dialkyl phthalates in high altitude atmosphere for validation of sampling method using a helicopter. *Bull. Environ. Contam. Toxicol.,* 66 (2001) 456-463; *C.A.,* 134 (2001) 299827g.

See also 1549, 2042.

29b. Chlorinated insecticides

1876 Alferness, P.L. and Wiebe, L.A.: Determination of glyphosphate and aminomethylphosphonic acid in crops by capillary gas chromatography with mass-selective detection: collaborative study. *J. Assoc. Off. Anal. Chem. Int.,* 84 (2001) 823-846.

1877 Castro, J., Pérez, R.A., Sánchez-Brunete, C. and Tadeo, J.L.: Analysis of pesticides volatilised from plants and soil by headspace solid-phase microextraction and gas chromatography. *Chromatographia,* 53(Suppl.) (2001) S361-S365.

1878 Colume, A., Cardenas, S., Gallego, M. and Valcarcel, M.: Semiautomatic multiresidue gas chromatographic method for the screening of vegetables for 25 organochlorine and pyrethroid pesticides. *Anal. Chim. Acta,* 436 (2001) 153-162.

1879 Covaci, A. and Schepens, P.: Chromatographic aspects of the analysis of selected persistent organochlorine pollutants in human hair. *Chromatographia,* 53(Suppl.) (2001) S366-S371.

1880 Frías, M.M., Frenich, A.G., Martínez Vidal, J.L., Mateu Sánchez, M., Olea, F. and Olea, N.: Analyses of lindane, vinclozolin, aldrin, *p,p'*-DDE, *o,p'*-DDT and *p,p'*-DDT in human serum using gas chromatography with electron capture detection and tandem mass spectrometry. *J. Chromatogr. B,* 760 (2001) 1-15.

1881 Lentza-Rizos, C., Avramides, E.J. and Visi, E.: Determination of residues of endosulfan and five pyrethroid insecticides in virgin olive oil using gas chromatography with electron-capture detection. *J. Chromatogr. A,* 921 (2001) 297-304.

1882 Li, J.: (Determination of pyrethrums residue in tobacco by wide-bore capillary gas chromatography). *Fenxi Huaxue,* 29 (2001) 793-795; CA Selects Plus GC, No. 17 (2001) 566282.

1883 Lopez, F.J., Pitarch, E., Egea, S., Beltran, J. and Hernandez, F.: Gas chromatographic determination of organochlorine and organophosphorus pesticides in human fluids using solid phase microextraction. *Anal. Chim. Acta,* 433 (2001) 217-226.

1884 McDonald, J.G., Vetter, W. and Hites, R.A.: Methylene retention indexes for isolated toxaphene congeners. *Anal. Chem.,* 73 (2001) 1374-1376.

1885 Reyzer, M.L. and Brodbelt, J.S.: Analysis of fire ant pesticides in water by solid-phase microextraction and gas chromatography/mass spectrometry or high-performance liquid chromatography/mass spectrometry. *Anal. Chim. Acta,* 436 (2001) 11-20.

24j 0 Tr 464F0 6.24243-255Tc 0.0547 Tw-88.32(solid-phase) Tj28.32 0 TD 3 Tr36F0 6 3 Tr.0.24 TfLi(Lacassie,)r 21-0.0456 1CC7lcasA.0.24 9.6 T36F0 6.24H (Lacassie,)r 9.Tw (3.6 0 TD r

solid-phase

A3 49a5 Tw 3anMa2gLG2ra1TD) Tj Tr0Bg Tr0 69.96Tc 0.009Tjv (CTro40a8T

extraction to the analysis of organochlorine pesticides in water. *J. Chromatogr. A,* 919 (2001) 381-388.

See also 2053.

29c. Phosphorus insecticides

1894 Bi, G.: (GC/FTIR spectra of fenthion). *Fenxi Kexue Xuebao,* 17 (2001) 88; *C.A.,* 135 (2001) 1582j.

1895 Castro Cano, M.L., Martínez Vidal, J.L., Egea González, F.J. and Martínez Galera, M.: Gas chromatographic method for assessing the dermal exposure of greenhouse applicators to dimethoate and malathion. *J. Chromatogr. Sci.,* 39 (2001) 345-350.

1896 Chen, Q., Yang, Y., Li, G., Jin, S. and Jin, Z.: (Determination and confirmation of terbufos residues in cereals by gas chromatography-mass spectrometry). *Huaxue Fenxi Jiliang,* 9 (2000) 9-11; CA Selects Plus GC, No. 11 (2001) 344602.

1897 Chen, X.-h. and Huang, Z.-q.: (Determination of methamidophos residue in tea leaves with gas chromatography). *Fenxi Shiyanshi,* 20 (2001) 99-100; *C.A.,* 135 (2001) 75897n.

1898 Chen, Y.-j., Lu, Y.-h., Zhang, J., Liu, J. and Wen, X.-m.: (Extraction and analysis of profenofos residue in tomato and cabbage by gas chromatography-flame photometric detector). *Sepu,* 19 (2001) 283-285.

1899 Chu, X.-g., Yong, W., Cai, H.-x. and Pan, J.-w.: (Rapid determination of ethephon residues in concentrated pineapple juice by head-space gas chromatography). *Sepu,* 19 (2001) 283-285.

[illegible] organic phosphorous pesticides by gas chromatography). *Hunan Shifan Daxue Ziran Kexue Xuebao,* 24 (2001) 50-51,54; CA Selects Plus GC, No. 15 (2001) 463559.

1908 Lu, Y., Chen, Y., Huo, H. and Liu, M.: (Sampling and gas chromatographic analysis of profenofos in the air). *Huanjing Huaxue,* 20 (2001) 203-204; *C.A.,* 134 (2001) 370874c.

1909 Podhorniak, L.V., Negron, J.F. and Griffith, F.D.Jr.: Gas chromatography with pulsed flame photometric detection multiresidue method for organophosphate pesticide and metabolite residues at the part-per-billion level in representative commodities of fruit and vegetable crop groups. *J. Assoc. Off. Anal. Chem. Int.,* 84 (2001) 873-890.

1910 Sato, M., Fujiwara, O., Takeuchi, S., Uchiyama, Y. and Niiyama, K.: (Application of the multi-residue analytical method for pesticide in agricultural products. (Part 2)). *Hokkaidoritsu Eisei Kenkyushoho,* 50 (2000) 32-40; *C.A.,* 134 (2001) 339675q.

1911 Takahashi, T., Hayafune, K. and Sunagawa, H.: (Proficiency testing of prefectural laboratories for food inspection in Hokkaido [Japan]. Analysis of pesticide residues in food). *Hokkaidoritsu Eisei Kenkyushoho,* 50 (2000) 27-31; *C.A.,* 134 (2001) 339674p.

1912 Xu, M. and Hao, Y.: (Gas chromatographic method for determination of parathion residues in vegetables and polluted water). *Huaxue Yanjiu Yu Yingyong,* 13 (2001) 338-339; CA Selects Plus GC, No. 17 (2001) 571722.

1913 Zhang, Y., Huang, Z.-q. and Li, Y.-j.: (Determination of organophosphorus pesticide multi-residues in tea by gas chromatography). *Sepu,* 19 (2001) 273-275.

1914 Zhou, H.-J. and Zhao, A.-d.: (Determination of the impurities in pesticide phorate by GC/MS). *Hebei Shifan Daxue Xuebao, Ziran Kexueban,* 25 (2001) 88-91; *C.A.,* 134 (2001) 362672v.

See also 1883.

29d. Carbamates

1915 Ameno, K., Lee, S.-K., In, S.-W., Yang, J.-Y., Yoo, Y.-C., Ameno, S., Kubota, T., Kinoshita, H. and Ijiri, I.: Blood carbofuran concentrations in suicidal ingestion cases. *Forensic Sci. Int.,* 116 (2001) 59-61.

1916 Krautler, O. and Kovarik, R.: (Selective headspace-GC-MS-method for the determination of dithiocarbamates- and thiuram disulfides-residues in fruit and vegetables after conversion into carbon disulfide). *Dtsch. Lebensm.-Rundsch.,* 97 (2001) 165-168; *C.A.,* 134 (2001) 365914m.

1917 Lu, X., Chen, Z., Chen, Q., Wang, W., Zhang, H. and Li, R.: (A method for residue analysis of benfuracarb and its metabolites in cotton seeds by bored-capillary GC). *Zhongguo Liangyou Xuebao,* 15, No. 6 (2000) 51-53,62; *C.A.,* 135 (2001) 75905p.

1918 Santos Delgado, M.J., Rubio Barroso, S., Toledano Fernandéz-Tostado, G. and Polo-Díez, L.M.: Stability studies of carbamate pesticides and analysis by gas chromatography with flame ionization and nitrogen-phosphorus detection. *J. Chromatogr. A,* 921 (2001) 287-296.

1919 Wang, Y., Zheng, J. and Cai, X.: (Determination of carbofuran, thiram and triadimefon in seed dressing by GC). *Nongyao,* 40 (2001) 17-18; *C.A.,* 135 (2001) 30244f.

29e. Herbicides

1920 Berrada, H., Font, G. and Moltó, J.C.: Influence of the solvent on the gas chromatographic behaviour or urea herbicides. *Chromatographia,* 54 (2001) 253-262.

1921 Lambropoulou, D.A., Konstantinou, I.K. and Albanis, T.A.: Determination of herbicides in natural waters using solid phase microextraction (SPME) and gas chromatography coupled with flame thermionic and mass spectometric detection. *Int. J. Environ. Anal. Chem.,* 78 (2000) 223-240.

1922 Mueller, T.C., Senseman, S.A., Carson, K.H. and Sciumbato, A.S.: Stability and recovery of triazine and chloracetamide herbicides from pH adjusted water samples by using empore solid-phase extraction disks and gas chromatography with ion trap mass spectrometry. *J. Assoc. Off. Anal. Chem. Soc.,* 84 (2001) 1070-1073.

1923 Nivinskiene, O. and Rekartas, R.: Identification of pesticides and their mixtures by FT-IR spectroscopy and gas-chromatography-mass spectroscopy. 2. Analysis of acidic herbicides. *Chemija,* 11, No. 2 (2000) 73-79; CA Selects Plus GC, No. 13 (2001) 392311.

1924 Walorczyk, S.: Evaluation of a method for the analysis of triazine herbicides and their metabolites in water by SPE on a carbon-based adsorbent then GC-MS determination. *Acta Chromatogr.,* 11 (2001) 42-50; CA Selects Plus GC, No. 16 (2001) 533182.

1925 Zhao, G. and Jia, F.: (Analysis of cinmethylin by gas chromatography). *Nongyao,* 40, No. 5 (2001) 20-21; CA Selects Plus GC, No. 15 (2001) 497649.

See also 1910.

29f. Fungicides

1926 Aita, N.: (Determination of chinomethionate in feed by capillary column gas chromatography). *Shiryo Kenkyu Hokoku (Tokyo Hishiryo Kensasho),* 26 (2001) 10-19; CA Selects Plus GC, No. 16 (2001) 532560.

1927 Correia, M., Delerue-Matos, C. and Alves, A.: Development of a SPME-GC-ECD methodology for selected pesticides in must and wine samples. *Fresenius J. Anal. Chem.,* 369 (2001) 647-651.

1928 Giza, I., Sztwiertnia, U. and Murawska, M.: Gas chromatographic determination of cyprodinyl and pyrimethanil residues in apples. *Acta Chromatogr.,* 11 (2001) 37-41; CA Selects Plus GC, No. 16 (2001) 533181.

1929 Kojima, F. and Furukawa, A.: (Simultaneous determination of triadimefon, triadimenol and propiconazole in feeds by capillary column gas chromatography). *Shiryo Kenkyu Hokoku (Tokyo Hishiryo Kensasho),* 26 (2001) 29-40; CA Selects Plus GC, No. 16 (2001) 532564.

1930 Zhang, M. and Zhang, Z.: (Gas chromatographic analysis of tricyclazole in technical and formulated products). *Guizhou Shifan Daxue Xuebao, Ziran Kexueban,* 19, No. 2 (2001) 33-34; CA Selects Plus GC, No. 15 (2001) 492309.

30. SYNTHETIC AND NATURAL DYES

30b. Chloroplast and other natural pigments

1931 Yin, P.-y., Lu, M.-s., Kong, Q.-s., Rong, R. and Liu, G.: (Structure characterization of melanin in black sesame by GC/MS). *Sepu,* 19 (2001) 268-269; *C.A.,* 135 (2001) 89468k.

31. PLASTICS AND THEIR INTERMEDIATES

1932 Buchalla, R., Boess, C. and Bogl, K.W.: Radiolysis products in gamma-irradiated plastics by thermal desorption-gas chromatography-mass spectrometry. *BGVV Hefte,* (2001) 1-236; CA Selects Plus GC, No. 11 (2001) 335995.

1933 Kaaria, K., Hirvonen, A., Norppa, H., Vainio, H., Rosenberg, C. and Piirila, P.: Exposure to 4,4'-methylenediphenyl diisocyanate (MDI) during molding of rigid polyurethane foam: determination of airborne MDI and urinary 4,4'-methylenedianiline (MDA). *Analyst (Cambridge),* 126 (2001) 476-479.

1934 Kaya, I. and Demirelli, K.: Study of some thermodynamic properties of poly(3,4-di-chloro benzyl methacrylate-co-ethyl methacrylate) using inverse gas chromatography. *J. Polym. Eng.,* 21 (2001) 1-22; CA Selects Plus GC, No. 11 (2001) 320512.

1935 Kiji, J., Yamada, A., Bertini, F. and Audisio, G.: Preparation of ethene/carbon monooxide copolymers using copper-based catalysts and their characterization by pyrolysis-gas chromatography. *Macromol. Rapid Commun.,* 22 (2001) 598-600; CA Selects Plus GC, No. 15 (2001) 493968.

1936 Luo, A.-q., Ling, Y.E., Fu, R.-n., Xie, G.-y. and Wang, X.-l.: Pyrolysis-gas chromatography/mass spectrometry for microstructure and pyrolysis pathway of polyester-polyether multiblock copolymer. *J. Beijing Inst. Technol.* (Engl. Ed.), 10 (2001) 45-50; CA Selects Plus GC, No. 13 (2001) 419330.

1937 Mignard, N., Zerroukhi, A. and Boinon, B.: Kinetic study of the thermal degradation of copolymers of vinylidene cyanide and *p*-substituted styrenes by thermogravimetric analysis and gas chromatography coupled with mass spectrometry. *Eur. Polym. J.*, 37 (2001) 1591-1598; CA Selects Plus GC, No. 13 (2001) 415847.

1938 Naik, H.G. and Aminabhavi, T.M.: Gas-liquid chromatographic study of polystyrene-*n*-alkane interactions. *J. Appl. Polym. Sci.*, 80 (2001) 1291-1298.

1939 Sato, H., Furuhashi, M., Yang, D., Ohtani, H., Tsuge, S., Okada, M., Tsunoda, K. and Aoi, K.: A novel evaluation method for biodegradability of poly(butylene succinate-co-butylene adipate) by pyrolysis-gas chromatography. *Polym. Degrad. Stab.*, 73 (2001) 327-334; CA Selects Plus GC, No. 15 (2001) 491402.

1940 Sundarrajan, S., Ganesh, K., Kishore, K. and Surianarayanan, M.: Thermal degradation processes in polysulphide polymers investigated by flash pyrolysis gas chromatography/mass spectrometry. *Indian J. Chem., Sect. A: Inorg., Bio-inorg., Phys., Theor. Anal. Chem.*, 40A (2001) 491-496; CA Selects Plus GC, No. 13 (2001) 392596.

1941 Wang, H.-g. and Zhang, F.-g.: (Analysis of DEG content in PET chip with gas chromatogram method). *Juzhi Gongye*, 13, No. 4 (2000) 24-26; CA Selects Plus GC, No. 11 (2001) 331473.

1942 Yang, R., Li, G. and Wang, K.: Characterization of structure of comblike polymer by pyrolysis gas chromatography and Fourier transform infrared spectroscopy. *J. Appl. Polym. Sci.*, 81 (2001) 359-363.

See also 1517, 1804, 1830, 1831, 1977.

32. DRUG ANALYSIS

32a. Drug analysis, general techniques

1943 Planinsek, O., Trojak, A. and Srcic, S.: The dispersive component of the surface free energy of powders assessed using inverse gas chromatography and contact angle measurements. *Int. J. Pharm.*, 221 (2001) 211-217; CA Selects Plus GC, No. 13 (2001) 405782.

See also 1499.

32b. Antirheumatics and antiinflammatory drugs

1944 Maurer, H.H., Tauvel, F.X. and Kraemer, T.: Screening procedure for detection of non-steroidal anti-inflammatory drugs and their metabolites in urine as part of a systematic toxicological analysis procedure for acidic drugs and poisons by gas chromatography-mass spectrometry after extractive methylation. *J. Anal. Toxicol.*, 25 (2001) 237-244.

32c. Autonomic and cardiovascular drugs

1945 Mudaliar, V., Patil, K., Suvarna, I.B. and Sundaresan, M.: Concurrent assay of carbamazepine and its dihydro impurity by pcSFC. *Indian Drugs,* 37 (2000) 493-496; *C.A.*, 134 (2001) 344682u.

1946 Popot, M.A., Boyer, S., Maciejewski, P., Garcia, P., Bonnaire, Y., Beyet, L., Lesage, D. and Tabet, J.C.: Determination of clenbuterol in horse hair by gas chromatography-tandem mass spectrometry. *Chromatographia,* 53(Suppl.) (2001) S375-S379.

1947 Salsali, M., Coutts, R.T. and Baker, G.B.: A rapid electron-capture gas chromatographic procedure for the analysis of *p*-hydroxymephenytoin. *J. Pharmacol. Toxicol. Methods,* 44 (2000) 461-465; CA Selects Plus GC, No. 13 (2001) 406725.

1948 Yajima, J., Tsuda, A., Yamada, S. and Tanaka, M.: Determination of saliva free-3-methoxy-4-hydroxyphenylglycol in normal volunteers using gas chromatography mass spectrometry. *Biog. Amines,* 16 (2001) 173-183; CA Selects Plus GC, No. 13 (2001) 413429.

32d. Central nervous system drugs

1949 Dhorde, U.J., Ramachandran, G. and Sundaresan, M.: A single, common assay for five sedatives using packed column supercritical fluid chromatography. *Indian Drugs,* 37 (2000) 481-485; CA Selects Plus GC, No. 11 (2001) 318002.

1950 Dimitrovska, A., Salevska, D. and Traikovich-Dzholevska, S.: Simultaneous determination of procaine hydrochloride and its degradation products by gas chromatography. *Farmatsiya (Sofia),* 46, No. 4 (1999) 10-13; CA Selects Plus GC, No. 16 (2001) 504381.

1951 Dufresne, C., Favetta, P., Paradis, C. and Boulieu, R.: Comparative study of liquid-liquid extraction and solid-phase extraction methods for the separation of sufentanil from plasma before gas chromatographic-mass spectrometric analysis. *Clin. Chem. (Washington),* 47 (2001) 600-602.

1952 Jiang, Z., Tan, J., Yao, L., Xing, L., Jiang, Z. and He, G.: Determination of α-hydroxytriazolam and α-hydroxyalprazolam in human urine by gas chromatography/electron-capture detector. *Fenxi Huaxue,* 29 (2001) 642-645; CA Selects Plus GC, No. 15 (2001) 484231.

1953 Kudo, K., Hino, Y., Ikeda, N., Inoue, H. and Takahashi, S.: Blood concentrations of tetracaine and its metabolite following spinal anesthesia. *Forensic Sci. Int.*, 116 (2001) 9-14.

1954 Norsten-Höög, C., Neidenström, P. and Arvidsson, T.: Determination of sameridine in blood plasma by nitrogen-selective gas chromatography. *J. Chromatogr. B,* 760 (2001) 123-127.

1955 Takayasu, T., Kondo, T., Sato, Y. and Ohshima, T.: Determination of triazolam by GC-MS in 2 autopsy cases. Distribution in body fluids and organs. *Leg. Med.*, 2 (2000) 206-211; *C.A.*, 134 (2001) 362386e.

1956 Tao, Q.-f.: (Determination of fenfluramine hydrochloride in tablets by gas chromatography with derivatization). *Sepu,* 19 (2001) 270-272.

1957 Yang, N.C., Hwang, K.L., Shen, C.H., Wang, H.F. and Ho, W.M.: Simultaneous determination of fluorinated inhalation anesthetics in blood by gas chromatography-mass spectrometry combined with a headspace autosampler. *J. Chromatogr. B,* 759 (2001) 307-318.

See also 1595, 1807.

32e. Chemotherapeutics (exc. cytostatics and antibiotics)

1958 Toribio, L., Bernal, J.L., del Nozal, M.J., Jiménez, J.J. and Nieto, E.M.: Applications of the Chiralpak AD and Chiralcel OD chiral columns in the enantiomeric separation of several dioxolane compounds by supercritical fluid chromatography. *J. Chromatogr. A,* 921 (2001) 305-313.

1959 Zhang, J., Xie, L., Chen, Z. and Xu, Y.: Determination of fluconazole in tears and aqueous humors after topically applied to rabbit eyes by gas-liquid chromatography. *Yanke Yanjiu,* 18 (2000) 385-388; *C.A.,* 134 (2001) 304918u.

32f. Cytostatics

1960 Fu, Y., Han, Y. and Man, H.: (Determination of β-elemene in human plasma by capillary gas chromatography). *Zhongguo Yiyuan Yaoxue Zazhi,* 21 (2001) 335-336; CA Selects Plus GC, No. 17 (2001) 554078.

1961 Fukumoto, M., Kubo, H. and Ogamo, A.: Quantitative determination of busulfan in serum using gas chromatography-mass spectrometry in negative-ion chemical ionization mode. *Anal. Lett.,* 34 (2001) 761-771.

1962 Lee, C.H., Row, K.H., Lee, Y.-W., Kim, J.-D. and Lee, Y.Y.: Supercritical fluid extraction of perillyl alcohol in Korean orange peel. *J. Liq. Chromatogr. Relat. Technol.,* 24 (2001) 1987-1996; CA Selects Plus GC, No. 17 (2001) 557133.

1963 Teutenberg, T., Lerch, O., Götze, H.-J. and Zinn, P.: Separation of selected anticancer drugs using superheated water as the mobile phase. *Anal. Chem.,* 73 (2001) 3896-3899.

32g. Other drug categories

1964 Tseng, M.-c., Tsai, M.-J., Lin, J.-h. and Wen, K.-c.: GC/MS analysis of anorectics adulterated in traditional Chinese medicines. *Yaowu Shipin Fenxi,* 8 (2000) 315-330; *C.A.,* 135 (2001) 66337c.

1965 Xing, W., Mi, H., Chen, B., Chen, S., He, X. and Wu, Y.: (Identifying origin fungi of traditional Chinese medicine hongqu by capillary gas chromatography). *Dier Junyi Daxue Xuebao,* 22 (2001) 429-431; CA Selects Plus GC, No. 16 (2001) 535144.

1969 Brewer, W.E., Galipo, R.C., Sellers, K.W. and Morgan, S.L.: Analysis of cocaine, benzoylecgonine, codeine, and morphine in hair by supercritical fluid extraction with carbon dioxide modified with methanol. *Anal. Chem.,* 73 (2001) 2371-2376.

1970 Giorgi, M., Bertini, S., Soldani, G. and Giusiani, M.: Comparison of HPLC and GC-MS methods for determination of embutramide (a component of Tanax or T-61) in biological specimens. *J. Anal. Toxicol.,* 25 (2001) 323-327.

1971 Liu, J., Hara, K., Kashimura, S., Kashiwagi, M. and Kageura, M.: New method of derivatization and headspace solid-phase microextraction for gas chromatographic-mass spectrometric analysis of amphetamines in hair. *J. Chromatogr. B,* 758 (2001) 95-101.

1972 Miki, A., Katagi, M., Tatsuno, M., Nakajima, K. and Tsuchihashi, H.: Discrimination of dimethylamphetamine use from methamphetamine use by a rapid urinalysis procedure based on the GC-MS determination. *Jpn. J. Forensic Toxicol.,* 19 (2001) 46-57; *C.A.,* 134 (2001) 321728z.

1973 Omaki, K., Amano, C., Yamazaki, Y. and Suzuki, M.: (Determination of codeine phosphate by gas chromatography). *Kanzei Chuo Bunsekishoho,* 39 (2000) 31-35; CA Selects Plus GC, No. 15 (2001) 497173.

1974 Paterson, S., McLachlan-Troup, N., Cordero, R., Dohnal, M. and Carman, S.: Qualitative screening for drugs of abuse in hair using GC-MS. *J. Anal. Toxicol.,* 25 (2001) 203-208.

1975 Polettini, A., Papa, P. and Montagna, M.: Comprehensive drug screening by integrated use of gas chromatography/mass spectrometry and remedi HS. *Ther. Drug. Monit.,* 23 (2001) 287-294; CA Selects Plus GC, No. 15 (2001) 469086.

1976 Salem, M.Y., Ross, S.A., Murphy, T.P. and ElSohly, M.A.: GC-MS determination of heroin metabolites in meconium. Evaluation of four solid-phase extraction cartridges. *J. Anal. Toxicol.,* 25 (2001) 93-98.

1977 Sellers, K.W.: Development and applications of analytical methods using gas chromatography and mass spectrometry for forensic and polymeric samples. Avail. *UMI,* Order No. DA9981294, 2001; 163 pp.; CA Selects Plus GC, No. 13 (2001) 410527.

1978 Shimomura, E.T., Hodge, G.D. and Paul, B.D.: Examination of postmortem fluids and tissues for the presence of methylecgonidine, ecgonidine, cocaine, and benzoylecgonine using solid-

1983 Wang, S.-M., Giang, Y.-S. and Ling, Y.-C.: Simultaneous supercritical fluid extraction and chemical derivatization for the gas chromatography-isotope dilution mass spectrometric determination of amphetamine and methamphetamine in urine. *J. Chromatogr. B,* 759 (2001) 17-26.

1984 Whiting, T.C., Liu, R.H., Chang, W.T. and Bodapati, M.R.: Isotopic analogues as internal standards for quantitative analyses of drugs and metabolites by GC-MS-nonlinear calibration approaches. *J. Anal. Toxicol.,* 25 (2001) 179-189.

See also 1496, 1670, 1955.

32i. Plant extracts

1985 Chen, J., Jiang, L., Yang, X., Lin, Y. and Zhang, G.: (Analysis of chemical constituents in "Baomingyou" for piglets by gas chromatography/mass spectrometry). *Fenxi Huaxue,* 29 (2001) 695-698; CA Selects Plus GC, No. 15 (2001) 484429.

1986 Du, S., Wang, X., Xia, C. and Liu, W.: (Determination of diosgenin in total saponin of *Dioscorea nipponica* Makino by capillary gas chromatography). *Yaowu Fenxi Zazhi,* 21 (2001) 116-119; CA Selects Plus GC, No. 12 (2001) 387524.

1987 Hsu, R. and Au, A.M.: Gas chromatography-chemical ionization mass spectrometry for drug screen analyses. *Bull. Environ. Contam. Toxicol.,* 66 (2001) 178-183; *C.A.,* 134 (2001) 349093n.

1988 Kubatova, A., Miller, D.J. and Hawthorne, S.B.: Comparison of subcritical water and organic solvents for extracting kava lactones from kava root. *J. Chromatogr. A,* 923 (2001) 187-194.

1989 Liu, S.-Y., Woo, S.-O. and Koh, H.-L.: HPLC and GC-MS screening of Chinese proprietary medicine for undeclared therapeutic substances. *J. Pharm. Biomed. Anal.,* 24 (2001) 983-992; *C.A.,* 135 (2001) 82090x.

See also 1861, 1886.

33. CLINICO-CHEMICAL APPLICATIONS

33b. Complex mixtures and profiling (single compounds by cross-reference only)

1990 Fu, X., Kimura, M., Iga, M. and Yamaguchi, S.: Gas chromatographic-mass spectrometric screening for organic acidemias using dried urine filter paper: determination of α-ketoacids. *J. Chromatogr. B,* 758 (2001) 87-94.

1991 Habbal, Z.M. and Chidiac-Tannoury, R.: Lactic acid dimer: an artifact in the gas chromatographic analysis of urine with massive lactic acid aciduria. *Clin. Chem. (Washington),* 47 (2001) 979-980.

1992 Inokuchi, T., Yoshida, I., Kaneko, A., Tashiro, K., Tashiro, S., Jogo, M., Aoki, K. and Tanaka, M.: Neonatal ketosis is not rare: experience of neonatal screening using gas chromatography-mass spectrometry. *J. Chromatogr. B,* 758 (2001) 57-60.

1993 Kuhara, T.: Diagnosis of inborn errors of metabolism using filter paper urine, urease treatment, isotope dilution and gas chromatography-mass spectrometry. *J. Chromatogr. B,* 758 (2001) 3-25 - a review with 83 refs.

1994 Kuhara, T., Ohdoi, C. and Ohse, M.: Simple gas chromatographic-mass spectrometric procedure for diagnosis pyrimidine degradation defects for prevention of severe anticancer side effects. *J. Chromatogr. B,* 758 (2001) 61-74.

1995 Nithipatikom, K., DiCamelli, R.F., Kohler, S., Gumina, R.J., Falck, J.R., Campbell, W.B. and Gross, G.J.: Determination of cytochrome P450 metabolites of arachidonic acid in coronary venous plasma during ischemia and reperfusion in dogs. *Anal. Biochem.,* 292 (2001) 115-124.

1996 Numazawa, M., Yoshimura, A. and Nagaoka, M.: Gas chromatography-mass spectrometric determination of activity of human placental aromatase using 16α-hydroxyandrostenedione as a substrate. *Biol. Pharm. Bull.,* 24 (2001) 564-566; CA Selects Plus GC, No. 11 (2001) 322653.

1997 Rashed, M.S.: Clinical applications of tandem mass spectrometry: ten years of diagnosis and screening for inherited metabolic diseases. *J. Chromatogr. B,* 758 (2001) 27-48 - a review with 78 refs.

1998 Service, K.M., Harris, S. and Brereton, R.G.: Analysis of badger urine volatiles using gas chromatography-mass spectrometry and pattern recognition techniques. *Analyst (Cambridge),* 126 (2001) 615-623.

1999 Xu, K., Wang, L., Cai, H., Zhang, T., Zhang, C. and Matsumoto, I.: Screening for inborn errors of metabolism using gas chromatography-mass spectrometry. *J. Chromatogr. B,* 758 (2001) 75-80.

2000 Yamaguchi, S., Iga, M., Kimura, M., Suzuki, Y., Shimozawa, N., Fukao, T., Kondo, N., Tazawa, Y. and Orii, T.: Urinary organic acids in peroxisomal disorders: a simple screening method. *J. Chromatogr. B,* 758 (2001) 81-86.

2001 Yatsenko, O.V., Bryuzgina, T.S. and Fartushok, N.V.: (Gas chromatographic test of lenses and blood serum lipids in patients with cataracts). *Med. Khim.,* 3 (2001) 66-68; CA Selects Plus GC, No. 17 (2001) 537717.

2002 Yu, X., Thompson, M.M., Shi, D. and Tuchman, M.: Quantification of benzoic, phenylacetic, and phenylbutyric acids from filter-paper blood spots by gas chromatography-mass spectrometry with stable isotope dilution. *Clin. Chem. (Washington),* 47 (2001) 351-354.

See also 1696, 1749, 1757, 1764, 1823, 1903.

34. FOOD ANALYSIS

34b. Complex mixtures (single compounds by cross-reference only)

2003 Araki, R.Y., Dodo, G.H., Reimer, S.H. and Knight, M.M.: Protocol for the determination of selected neutral and acidic semivolatile organic contaminants in fish tissue. *J. Chromatogr. A,* 923 (2001) 177-185.

2004 Escarpa, A. and Gonzalez, M.C.: An overview of analytical chemistry of phenolic compounds in foods. *Crit. Rev. Anal. Chem.,* 31 (2001) 57-139 - a review with 235 refs.

2005 Fernandez, J.O., Judas, I.C., Oliveira, M.B., Ferreira, I.M.P.L.V.O. and Ferreira, M.A.: A GC-MS method for quantitation of histamine and other biogenic amines in beer. *Chromatographia,* 53(Suppl.) (2001) S327-S331.

2006 Hammond, D.A.: Synergy between liquid chromatographic-pulsed amperometric detection and capillary-gas chromatographic methods for the detection of juice adulteration. *J. Assoc. Off. Anal. Chem. Int.,* 84 (2001) 964-975.

2007 Jorgensen, L.V., Huss, H.H. and Dalgaard, P.: Significance of volatile compounds produced by spoilage bacteria in vacuum-packed cold-smoked salmon (*Salmo salar*) analyzed by GC-MS and multivariate regression. *J. Agric. Food Chem.,* 49 (2001) 2376-2381.

2008 Nerin, C., Rubio, C., Salafranca, J. and Batlle, R.: The simplest sample treatment techniques to assess the quality and safety of food packaging materials. *Rev. Anal. Chem.,* 19 (2000) 435-465; *C.A.,* 135 (2001) 91642f - a review with 145 refs.

2009 Pickering, G.J., Heatherbell, D.A. and Barnes, M.F.: GC-MS analysis of reduced-alcohol Muller-Thurgau wine produced using glucose oxidase-treated juice. *Lebensm.-Wiss. Technol.,* 34 (2001) 89-94; *C.A.,* 135 (2001) 45358v.

2010 Roessner, U., Luedemann, A., Brust, D., Fiehn, O., Linke, T., Willmitzer, L. and Fernie, A.R.: Metabolic profiling allows comprehensive phenotyping of genetically or environmentally modified plant systems. *Plant Cell,* 13 (2001) 11-29; *C.A.,* 135 (2001) 16330z.

2011 Verleyen, T., Verhe, R., Garcia, L., Dewettinck, K., Huyghebaert, A. and de Greyt, W.: Gas chromatographic characterization of vegetable oil deodorization distillate. *J. Chromatogr. A,* 921 (2001) 277-285.

2012 Wu, Z.-y. and Zhou, J.-k.: (Gas chromatographic analysis of trace organic components in beer). *Hebei Daxue Xuebao, Ziran Kexueban,* 21 (2001) 146-148,153; CA Selects Plus GC, No. 17 (2001) 570136.

2013 Zhang, Z.: (Test of mineral oils in edible oil by gas chromatography). *Zhongguo Youzhi,* 26 (2001) 44-45; CA Selects Plus GC, No. 11 (2001) 328423.

See also 1633, 1661, 1682, 1689, 1691, 1703, 1707, 1715, 1717, 1720, 1731, 1741, 1743, 1744, 1745, 1746, 1752, 1753, 1756, 1783, 1809, 1810, 1826, 1835, 1853, 1860, 1862, 1866, 1869, 1872, 1873, 1874, 1876, 1878, 1881, 1887, 1889, 1890, 1891, 1896, 1897, 1898, 1899, 1902, 1907, 1909, 1910, 1911, 1912, 1913, 1916, 1918, 1919, 1926, 1927, 1928, 1929, 2059.

34c. Organoleptically important compounds (flavors, odors, volatiles)

2014 Alonso, L. and Fraga, M.J.: Simple and rapid analysis for quantitation of the most important volatile flavor compounds in yogurt by headspace gas chromatography-mass spectrometry. *J. Chromatogr. Sci.,* 39 (2001) 297-300.

2015 Ansorena, D., Gimeno, O., Astiasaran, I. and Bello, J.: Analysis of volatile compounds by GC-MS of a dry fermented sausage: chorizo de Pamplona. *Food Res. Int.,* 34 (2001) 67-75; *C.A.,* 135 (2001) 45429u.

2016 Buszewski, B. and Ligor, M.: Qualitative and quantitative analyses of volatile organic compounds in wines using SPME-GC. *Chem. Anal. (Warsaw),* 46 (2001) 215-224.

2017 Dieguez, S.C., de la Peña, M.L.G. and Gómez, E.F.: Concentration of volatiles in marc distillates from Galicia according to storage conditions of the grape pomace. *Chromatographia,* 53(Suppl.) (2001) S406-S411.

2018 Hofmann, T.: (New chemical sensors for aromatic substance measurement). *Nachr. Chem.,* 48 (2000) 938-941; *C.A.,* 134 (2001) 371563n - a review with 19 refs.

2019 Huong, N.T.T., Valentova, H., Velisek, J., Cepicka, J., Pokorny, J. and Pudil, F.: Evaluation of beer by sensory and gas chromatography analysis. *Czech J. Food Sci.,* 18 (2000) 245-250; *C.A.,* 135 (2001) 60459x.

2020 Jirovetz, L., Buchbauer, G., Fleischhacker, W. and Ngassoum, M.B.: Analysis of the aroma compounds of two different Palm wine species ("Matango" and "Raffia") from Cameroon using SPME-GC-FID, SPME-GC-MS and olfactometry. *Ernaehrung (Vienna),* 25, No. 2 (2001) 67-71; *C.A.,* 135 (2001) 91845z.

2021 Lois, L.C., Diéguez, S.C., de la Peña, M.L.G. and Gómez, E.F.: SPE-GC determination of aromatic compounds in two varieties of white grape during ripening. *Chromatographia,* 53(Suppl.) (2001) S350-S355.

2022 Ortega, C., López, R., Cacho, J. and Ferreira, V.: Fast analysis of important wine volatile compounds. Development and validation of a new method based on gas chromatographic-flame ionisation detection analysis of dichloromethane microextracts. *J. Chromatogr. A,* 923 (2001) 205-214.

2023 Pinho, O., Ferreira, I.M.P.L.V.O., Casal, S., Fernandes, J.O., Oliveira, M.B.P.P. and Ferreira, M.A.: Method optimization for analysis of the volatile fraction of ewe cheese by solid-phase microextraction. *Chromatographia,* 53(Suppl.) (2001) S390-S393.

2024 Pozo-Bayón, M.A., Pueyo, E., Martín-Alvarez, P.J. and Polo, M.C.: Polydimethylsiloxane solid-phase microextraction-gas chromatography method for the analysis of volatile compounds in wines. Its application to the characterization of varietal wines. *J. Chromatogr. A,* 922 (2001) 267-275.

2025 Radovic, B.S., Careri, M., Mangia, A., Musci, M., Gerboles, M. and Anklam, E.: Contribution of dynamic headspace GC-MS analysis of aroma compounds to authenticity testing of honey. *Food Chem.,* 72 (2001) 511-520.

2026 Rimkus, G.G., Rummler, M. and Wolf, M.: Multiple method for the determination of synthetic musk compounds including a few metabolites in fish and human samples. *Lebensmittelchemie,* 55, No. 3 (2001) 60; *C.A.,* 135 (2001) 30836a.

2027 Wisneski, H.H.: Determination of coumarin in fragrance products by capillary gas chromatography with electron capture detection. *J. Assoc. Off. Anal. Chem. Int.,* 84 (2001) 689-692.

2028 Yaylı, N., Ayaz, F.A., Kucukislamoglu, M. and Aytekin, A.: Analysis of volatile components of *Arbutus unedo* L. fruits by GC-MS. *Indian J. Chem., Sect. B: Org. Chem. Incl. Med. Chem.,* 40B (2001) 173-176; *C.A.,* 135 (2001) 2963w.

See also 1787, 2006.

35. ENVIRONMENTAL ANALYSIS

35a. General papers and reviews

2029 Bunyatyan, Y.A.: (Determination of heterocyclic nitrification inhibitors in environmental objects and biological materials). *Gig. Sanit.,* (2001) 74-76; *C.A.,* 135 (2001) 60630w.

2030 Clement, R.E., Yang, P.W. and Koester, C.J.: Environmental analysis. *Anal. Chem.,* 73 (2001) 2761-2790 - a review with 640 refs.

2031 Crume, C.: Analysis of volatile organics by field-portable GC/MS. *Environ. Test. Anal.,* 10, No. 3 (2001) 25-26; *C.A.,* 135 (2001) 116161p.

2032 Eckenrode, B.A.: Environmental and forensic applications of field-portable GC-MS: and overview. *J. Am. Soc. Mass Spectrom.,* 12 (2001) 683-693; *C.A.,* 135 (2001) 70260q - a review with 12 refs.

2033 Wang, Z.: Study of environmentally significant compounds using gas chromatography-mass spectrometry and solid phase extraction with cross-linked poly(vinyl pyridine) sorbents. Avail. *UMI,* Order No. DA9981226, 2001; 167 pp.; CA Selects Plus GC, No. 13 (2001) 410529.

2034 Wang, Z., Fingas, M., Owens, E.H., Sigouin, L. and Brown, C.E.: Long-term fate and persistence of the spilled Metula oil in a marine salt marsh environment. Degradation of petroleum biomarkers. *J. Chromatogr. A,* 926 (2001) 275-290.

See also 1555, 1852.

35b. Air pollution (complex mixtures; single compounds by cross-reference only)

2035 Colman, J.J., Swanson, A.L., Meinardi, S., Sive, B.C., Blake, D.R. and Rowland, F.S.: Description of the analysis of a wide range of volatile organic compounds in whole air samples collected during PEM-tropics A and B. *Anal. Chem.,* 73 (2001) 3723-3731.

2036 Crume, C.: Direct, continuous emission monitoring with a field-

See also 1547, 1548, 1647, 1649, 1651, 1659, 1660, 1662, 1669, 1678, 1683, 1719, 1726, 1728, 1805, 1870, 1875, 1908, 2044.

35c. Water pollution (complex mixtures; single compounds by cross-reference only)

2043 Belau, E., Grote, C., Spiekermann, M. and Levsen, K.: An improved automatic analyzer for organic compounds in water based on headspace solid-phase microextraction (SPME) coupled to gas chromatography. *Field Anal. Chem. Technol.,* 5 (2001) 37-49; CA Selects Plus GC, No. 12 (2001) 361197.

2044 Dewulf, J. and van Langenhove, H.: Solid-phase microextraction of volatile organic compounds in environmental applications. *Am. Lab. (Shelton),* 33, No. 4 (2001) 18-20.

2045 Koroma, B.M., Wang, K.-X. and Jinya, D.D.: Advanced analytical determination of volatile organic compounds (VOC) and other major contaminants in water samples using GC-Ion Trap MS. *J. Environ. Sci. (China),* 13 (2001) 25-36; *C.A.,* 135 (2001) 24207e.

2046 Podzorova, E.A., Pikaev, A.A., Buryak, A.K., Ulyanov, A.V. and Pikaev, A.K.: Radiation-chemical purification of water from petroleum products as studied by gas chromatography-mass spectrometry. *High Energy Chem.,* 35, No. 2 (2001) 61-68; CA Selects Plus GC, No. 12 (2001) 374567.

2047 Richardson, S.D.: Water analysis. *Anal. Chem.,* 73 (2001) 2719-2734 - a review with 191 refs.

2048 Russo, M.V., Goretti, G., Veschetti, E. and Cutilli, D.: Short open tubular columns to trap organic micro-pollutants from aqueous samples. *Chromatographia,* 54 (2001) 225-235.

See also 1543, 1597, 1638, 1640, 1650, 1654, 1658, 1665, 1666, 1685, 1690, 1693, 1697, 1698, 1712, 1727, 1748, 1758, 1774, 1775, 1779, 1782, 1803, 1832,

See also 1813, 1834, 1847, 1851, 1855, 1858, 1877, 1887, 2057.

36. SOME TECHNICAL PRODUCTS AND COMPLEX MIXTURES

36a. Surfactants

2054 Bastos, J.K., Freitas, L.A.P., Pagliarussi, R.S. and Merino, R.E.: A rapid quantitative method for the analysis of sulfuramid and its isomers in ant bait by capillary column gas chromatography. *J. Sep. Sci.,* 24 (2001) 406-410.

2055 Cathum, S. and Sabik, H.: Simultaneous determination of alkylphenol polyethoxylate surfactants and their degradation products in water, effluent and mussel using gas chromatography-mass spectrometry. *Chromatographia,* 53, Supplement (2001) S400-S405.

2056 Cuzzola, A., Raffaelli, A., Saba, A. and Salvadori, P.: Identification and characterization of Fenton oxidation products of surfactants by electrospray mass spectrometry and solid phase microextraction gas chromatography/mass spectrometry. 3. Polyethoxylated fatty alcohols and nonylphenols. *Rapid Commun. Mass Spectrom.,* 15 (2001) 1198-1206.

2057 Valsecchi, S., Polesello, S. and Cavalli, S.: Recovery of 4-nonylphenol and 4-nonylphenol ethoxylates from river sediments by pressurised liquid extraction. *J. Chromatogr. A,* 925 (2001) 297-301.

36b. Antioxidants and preservatives

2058 Blagodarnya, M.V.: (Gas-chromatographic determination of Agidol-1 in gasolines). *Neftepererab. Neftekhim. (Moscow),* No. 5 (2000) 47-48; *C.A.,* 135 (2001) 63532b.

2059 Choong, Y.-M. and Lin, H.-J.: Gas chromatographic determination of synthetic antioxidants in edible fats and oils - a simple methylation method. *Yaowu Shipin Fenxi,* 9 (2001) 20-26; CA Selects Plus GC, No. 15 (2001) 463946.

36c. Complex mixtures, technical products and unidentified compounds

2060 Bertoncini, F., Thiébaut, D., Gagean, M., Carrazé, B., Valette, P. and Duteurtre, X.: Easy hyphenation of supercritical-fluid chromatography to atomic-emission detection for analysis of lubricant additives. *Chromatographia,* 53(Suppl.) (2001) S427-S433.

2061 Bocchinfuso, G., Aiello, L., Ferone, V., Cinotti, A. and Bernabei, M.: Toxicological evaluation of gasolines by GC-MS analysis. *Chromatographia,* 53(Suppl.) (2001) S345-S349.

2062 Briker, Y., Ring, Z., Iacchelli, A., McLean, N., Fairbridge, C., Malhotra, R., Coggiola, M.A. and Young, S.E.: Diesel fuel analysis by GC-FIMS: normal paraffins, isoparaffins, and cycloparaffins. *Energy Fuels,* 15 (2001) 996-1002; *C.A.,* 135 (2001) 109458n.

2063 Camarero, S., Bocchini, P., Galletti, G.C., Martinez, M.J. and Martinez, A.T.: Compositional changes of wheat lignin by a fungal peroxidase analyzed by pyrolysis-GC-MS. *J. Anal. Appl. Pyrolysis,* 58-59 (2001) 413-423.

2064 Cao, J., Fu, D., Guo, M. and Zhang, F.: (Analysis of anticorrosive paint for ship bottom by pyrolysis gas chromatography/mass spectrometry). *Tuliao Gongye,* 31 (2001) 39-40; CA Selects Plus GC, No. 11 (2001) 328458.

2065 Choi, J.-W., Faix, O. and Meier, D.: Characterization of residual lignins from chemical pulps of spruce (*Picea abies* L.) and beech (*Fagus sylvatica* L.) by analytical pyrolysis-gas chromatography/mass spectrometry. *Holzforschung,* 55 (2001) 185-192; CA Selects Plus GC, No. 17 (2001) 561720.

2066 Colombini, M.P., Modugno, F., Ginnarelli, S., Fuoco, R. and Matteini, M.: GC-MS characterization of paints varnishes. *Microchem. J.,* 67 (2000) 385-396.

2067 Colombini, M.P., Modugno, F., Menicagli, E., Fuoco, R. and Giacomelli, A.: GC-MS characterization of proteinaceous and lipid binders in UV aged polychrome artifacts. *Microchem. J.,* 67 (2000) 291-300.

2068 Del Rio, J.C., Gutierrez, A., Romero, J., Martinez, M.J. and Martinez, A.T.: Identification of residual lignin markers in eucalypt kraft pulps by Py-GC/MS. *J. Anal. Appl. Pyrolysis,* 58-59 (2001) 425-439.

2069 Duan, W.-g., Chen, X.-p., Wang, L.-l., Deng, S. and An, X.-n.: (Study on main chemical constituents of hydrogenated rosin). *Linchan Huaxue Yu Gongye,* 21 (2001) 1-6; *C.A.,* 135 (2001) 78416r.

2070 Fernandez, M.P., Watson, P.A. and Breuil, C.: Gas chromatography-mass spectrometry method for the simultaneous determination of wood extractive compounds in quaking aspen. *J. Chromatogr. A,* 922 (2001) 225-233.

2071 Gimeno-Adelantado, J.V., Mateo-Castro, R., Doménech-Carbó, M.T., Bosch-Reig, F., Doménech-Carbó, A., Casas-Catalán, M.J. and Osete-Cortina, L.: Identification of lipid binders in paintings by gas chromatography. Influence of the pigments. *J. Chromatogr. A,* 922 (2001) 385-390.

2072 Gonzalez-Vila, F.J., Tinoco, P., Almendros, G. and Martin, F.: Pyrolysis-GC-MS analysis of the formation and degradation stages of charred residues from lignocellulosic biomass. *J. Agric. Food Chem.,* 49 (2001) 1128-1131.

2073 Gryglewicz, G. and Gryglewicz, S.: Determination of elemental sulfur in coal by gas chromatography-mass spectrometry. *Fresenius J. Anal. Chem.,* 370 (2001) 60-63.

2074 Hashimoto, K., Urakami, K., Fujiwara, Y., Terada, S. and Watanabe, C.: Determination of residual solvents in pharmaceuticals by thermal desorption-GC/MS. *Anal. Sci.,* 17 (2001) 645-648.

2075 Hernández, M., Hernández-Coronado, M.J., Montiel, M.D., Rodríguez, J. and Arias, M.E.: Analysis of alkali-lignin in a paper mill effluent decolourised with two Streptomyces strains by gas chromatography-mass spectrometry after cupric oxide degradation. *J. Chromatogr. A,* 919 (2001) 389-394.

2076 Iwase, K.-i., Ikeda, H., Yamazaki, Y. and Ujihara, S.: (Determination of compounds containing oxygen in gasoline by gas chromatography). *Kanzei Chuo Bunsekishoho,* 39 (2000) 81-90; CA Selects Plus GC, No. 15 (2001) 497221.

2077 Jalbert, J., Gilbert, R. and Tétreault, P.: Simultaneous determination of dissolved gases and moisture in mineral insulating oils by static headspace gas chromatography with helium photoionization pulsed dischrage detection. *Anal. Chem.,* 73 (2001) 3382-3391.

2078 Kato, K.: (Fluorinated lubricants for magnetic recording media, their manufacture, and the magnetic recording media). *Jpn. Kokai Tokkyo Koho* JP 2001 164,279 (Cl. C10M107/38), 19 Jun. 2001, Appl. 1999/351,388, 10 Dec. 1999; 7 pp.; *C.A.,* 135 (2001) 35085q.

2079 Kuroda, K.-i., Ozawa, T. and Ueno, T.: Characterization of sago palm (Metroxylon sagu) lignin by analytical pyrolysis. *J. Agric. Food Chem.,* 49 (2001) 1840-1847.

2080 Lei, S.-h. and Zhang, Y.-c.: (Determination of hydrocarbon impurities in propylene by gas chromatography). *Shihua Jishu Yu Yingyong,* 19 (2001) 119-120; CA Selects Plus GC, No. 12 (2001) 386111.

2081 Ogumi, Z., Sano, A., Inaba, M. and Abe, T.: Pyrolysis/gas chromatography/mass spectroscopy analysis of the surface film formed on graphite negative electrode. *J. Power Sources,* 97-98 (2001) 156-158; CA Selects Plus GC, No. 15 (2001) 498227.

2082 Shi, B., Xu, G. and Liu, J.: (Gas chromatography-mass spectrometry analysis of pitch smoke components). *Huanjing Huaxue,* 20 (2001) 200-201; *C.A.,* 135 (2001) 50224c.

2083 Sides, S.L., Polowy, K.B., Thornguest, A.D. and Burinsky, D.J.: Identification of a pharmaceutical packaging off-odor using solid phase microextraction gas chromatography/mass spectrometry. *J. Pharm. Biomed. Anal.,* 25 (2001) 379-386.

2084 Taranenko, N.A., Dorogova, V.B., Meshchakova, N.M. and Panfilova, L.I.: (Use of gas and liquid chromatography in examining the metabolism of organic compounds (Review)). *Gig. Sanit.,* No. 2 (2001) 75-76; *C.A.,* 134 (2001) 362340k.

2085 Tolmacheva, O.S. and Kostina, G.V.: (Chromatographic monitoring of sulfolane content in sulfolane-triethylene glycol extracting agent). *Neftepererab. Neftekhim. (Moscow),* No. 3 (2001) 40-42; *C.A.,* 135 (2001) 101635x.

2086 Torres, A., de Marco, I., Caballero, B.M., Laresgoiti, M.F., Cabrero, M.A. and Chomon, M.J.: GC-MS analysis of the liquid products obtained in the pyrolysis of fiber-glass polyester sheet moulding compound. *J. Anal. Appl. Pyrolysis,* 58-59 (2001) 189-203.

2087 Tripathi, S.C., Bindu, P. and Ramanujam, A.: Studies on the identification of harmful radiolytic products of 30% TBP-*n*-dodecane-HNO_3 by gas liquid chromatography. I. Formation of diluent degradation products and their role in Pu retention behaviour. *Separ. Sci. Technol.,* 36 (2001) 1463-1478.

2088 Trzeszczynski, J. and Huzar, E.: Investigation of volatile compounds evolved from plastics by headspace method. *Chromatographia,* 53 (2001) 534-538.

2089 Vane, C.H., Abbott, G.D. and Head, I.M.: The effect of fungal decay (*Agaricus bisporus*) on wheat straw lignin using pyrolysis-GC-MS in the presence of tetramethylammonium hydroxide (TMAH). *J. Anal. Appl. Pyrolysis,* 60 (2001) 69-78.

2090 Wang, L., Ando, S., Ishida, Y., Ohtani, H., Tsuge, S. and Nakayama, T.: Quantitative and discriminative analysis of carnauba waxes by reactive pyrolysis-GC in the presence of organic alkali using a vertical microfurnace pyrolyzer. *J. Anal. Appl. Pyrolysis,* 58-59 (2001) 525-537.

2091 Zhao, S.-y., Kuang, G., Wang, Y.-s., Wang, L.-e. and Zhao, Z.-s.: (Analysis of methanol-water-methyl acetate-acetic acid by gas chromatography). *Fuzhou Daxue Xuebao, Ziran Kexueban,* 29 (2001) 103-105; CA Selects Plus GC, No. 17 (2001) 540596.

See also 1495, 1521, 1537, 1636, 1648, 1663, 1672, 1689, 1700, 1701, 1710, 1713, 1716, 1724, 1735, 1756, 1763, 1814, 1832, 2034, 2041.

37. CELLS, CELLULAR PARTICLES AND SUPRAMOLECULAR STRUCTURES

See 1786.

38. INORGANIC COMPOUNDS

38b. Anions

2092 Kou, H.-S., Wu, H.-L., Chen, S.-H., Wu, S.-M. and Lin, S.-J.: Gas chromatographic determination of iodide anion as naphthyl derivative. *Chin. Pharm. J. (Taipei),* 52 (2000) 333-339; CA Selects Plus GC, No. 12 (2001) 363080.

2093 Mishra, S., Gosain, S., Jain, A. and Verma, K.K.: Determination of bromide in fumigated and natural samples by conversion into bromophenols followed by gas chromatography-mass spectrometry. *Anal. Chim. Acta,* 439 (2001) 115-123.

38c. Permanent and rare gases

See 2077.

38d. Volatile inorganic compounds

2094 Cheng, S.-p.: (Application of gas chromatograph at coal chemical plant). *Jishu Yu Xunlian,* 26, No. 3 (2001) 104-111; CA Selects Plus GC, No. 17 (2001) 569820.

2095 Kou, H.-j.: (Determination of trace water and hydrogen sulfide in liquid hydrocarbons by gas chromatography). *Shihua Jishu Yu Yingyong,* 19 (2001) 116-118; CA Selects Plus GC, No. 12 (2001) 386109.

2096 Richter, M., Berndt, H., Schutze, F.-W. and Fricke, R.: NO_x-N_2 converter for a straightforward quantitative determination of NO and NO_2 during tests of $DeNO_x$ catalysts. *Chem. Eng. Technol.,* 24 (2001) 483-485; *C.A.,* 135 (2001) 96543j.

See also 1836.