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Tome 2: Natural Products and Others

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TOME 2
NATURAL PRODUCTS and OTHERS

NATURAL PRODUCTS

Invited CRITICAL FLUID OPTIONS FOR THE EXTRACTION AND ENRICHMENT OF NUTRACEUTICALS.
King J.W., Dunford N.T. and Taylor S.L., National Center for Agricultural Utilization Research, Peoria (USA)

• SUPERCRITICAL FLUID TECHNOLOGY MAKES ECONOMIC SENSE: FROM CONCEPT TO COMMERCIALIZATION.
  Chordia L., Thar Designs Inc., Pittsburgh (USA)

• CHARACTERISATION OF A NOVEL SUPPORT FOR BIOCATALYSIS IN SUPERCRITICAL CARBON DIOXIDE.
  Al-Duri B., Goddard R. and Bosley J., University of Birmingham (United Kingdom)

• SOLUBILITY AND FRACTIONATION OF LIPIDS USING SUBCRITICAL 
  R134a.
  Catchpole O. and Proells K., Industrial Research Ltd., Lower Hutt (New Zealand)

• A NEW CONCEPT IN CONTINUOUS SUPERCRITICAL FLUID FRACTIONATION OF LIPIDS.

• ALCOHOL REDUCTION FROM EXCESS WIN BY SUPERCRITICAL CO2 EXTRACTION.
  Gamse Th. and Marr R., Technischen Universität, Graz (Austria)

• CERTAIN CRITICAL ASPECTS OF NATURAL PRODUCTS EXTRACTION USING SUPERCRITICAL CARBON DIOXIDE.
  Udayasankar K. and Manohar B., Central Food Technology Research Institute, Mysore (India)
**SF Extraction**

- **SUPERCRITICAL CO₂ EXTRACTION OF GLA AND OTHER LIPIDS FROM THE CYANOBACTERIUM *Spirulina Maxima***.

- **PHASE EQUILIBRIA AND EXTRACTION OF VITAMIN E RICH OIL FROM *SILYBUM MARIANUM* USING DENSE CO₂ AND PROPANE**.
  Skerget M., Knez Z., Hadolin M. and Stangler-Herodez S., University of Maribor (Slovenia)

- **SOLUBILITY OF WHEAT GERM OIL IN SUPERCRITICAL CARBON DIOXIDE**.
  Molero-Gómez A. and Martinez de la Ossa E., University of Cadiz (Spain)

- **THE EFFECTS OF PROCESS PARAMETERS ON THE SUPERCRITICAL CO₂ EXTRACTION OF MINT HYBRIDS OILS**.
  Qafisheh N. and Barth D., LTS / ENSIC, Nancy (France)

- **SUPERCRITICAL CARBON DIOXIDE EXTRACTION OF SUNFLOWER SEEDS OILS AND CHARACTERISATION OF THE PRODUCTS**.
  Royer F. and Barth D., LTS / ENSIC, Nancy (France)

- **SUPERCRITICAL CO₂ EXTRACTION OF PEPPERMINT. INFLUENCE OF EXTRACTION CONDITIONS ON ANTIOXIDANT ACTIVITY**.
  Ribeiro M.A., Bernardo-Gil M.G., Esquivel M.M., Instituto Superior Tecnico, Lisboa (Portugal) and Moldão-Martins O., Instituto Superior de Agronomia, Lisboa (Portugal)

- **SUPERCRITICAL FLUID EXTRACTION OF NATURAL COMPOUNDS FROM THE *Pinus Pinaster* AIT. DRY NEEDLES**.
  Ruivo R., Ribeiro N., Casimiro T., Vital J. and Simões P., Universidade Nova de Lisboa, Caparica (Portugal)

- **SUPERCRITICAL FLUID EXTRACTION OF CAROTENOIDS FROM *NANOCHLOROPSIS GADITANA***.
  Arellano A., Mantell C, Rodriguez M., Martinez de la Ossa E., University of Cadiz, Lubian L. and Montero O., Instituto de Ciencias Marinas de Andalucia, Cadiz (Spain)

- **SUPERCRITICAL CO₂ EXTRACTION FOR PRODUCING SECONDARY METABOLITES FROM DILL AND CARAWAY**.
  Gamse Th. and Marr R., TU Graz (Austria)

- **SUPERCRITICAL FLUID, SOXHLET AND MICROWAVE EXTRACTION OF POPPY PLANT (*Papaver somniferum L., Papaveraceae*) AND MIXTURES OF POPPY SEED WITH DIFFERENT MEDICINAL PLANT DRUGS**.
  Then M., Semmelweis University, Budapest , Illés V., Central Food Research Institute, Budapest, Daood H., University of Veszprem and Szentmihalyi K., Hungarian Academy of Sciences, Budapest (Hungary)

- **STUDY ON EXTRACTING THE ACTIVE INGREDIENTS FROM COMMON ANDOGRAPHIS HERB BY USING SUPERCRITICAL CARBON DIOXIDE**.
  Jin Bo, Yao Yudong, Xiang Zhimin, and Liu Hancha, GuangZhou Light Industry Research Institute of China, GuangZhou (China)
• SUPERCRITICAL FLUID EXTRACTION OF NATURAL FLAVOURING COMPOUNDS OF DRY-CURED HAM.
  De Diego T., Zöller H., Lozano P. and Iborra J. L., University of Murcia (Spain)

• EXTRACTION OF BIOACTIVES FRACTIONS FROM THE TUNICATE Cynthia Savignyi.
  Abourriche A., Charrouf M., Bennamara A., Faculty of Sciences, Casablanca (Maroc).
  Bontemps N. and Francisco C., Centre de Phytopharmacie, Perpignan (France)

• EXTRACTION OF MEDICINAL HERBS USING SUPERCRITICAL CO2 AND CO2 + ETHANOL MIXTURES.
  Catchpole O.J., da Silva B.M.T., Grey J.B., Industrial Research Ltd.,
  Lower Hutt, Perry N.B. and Smallfield B.M., Crop and Food Research,
  Dunedin (New Zealand)

• THE EFFECT OF ETHANOL ENTRAINER ON SUPERCRITICAL CO2 EXTRACTION OF SEAWEED (Undaria pinnatifida).
  Hong S.-K. and Chun B.-S., Pukyung National University, Pusan (Korea)

• SUPERCRITICAL CARBON DIOXIDE EXTRACTION AND CHARACTERIZATION OF MURRAYA PANICULATA ESSENTIAL OIL.
  Marquina-Chidsey G., Grosse Palencia R., Figueroa Y., University of Carabobo,
  Barbula-Valencia and Martinez J.L., University Simon Rodriguez, Valencia (Venezuela)

• PROCESSING OF CAPSAICIN USING SUPERCRITICAL CO2.
  Duarte C.M.M., Crew M.Aguirar-Ricardo A. and Nunes da Ponte M.,
  Universidade Nova de Lisboa (Portugal)

• COMPARATIVE STUDY ON THE SUPERCRITICAL FLUID AND MICROWAVE EXTRACTION OF GREATER CELANDINE
  (Chelidonium majus L.)
  Sarközi A., Then M., Semmelweis University, Budapest, Illés V.,
  Technical University of Veszprem and Szentmihalyi K., Hungarian Academy of Sciences, Budapest (Hungary)

• EXTRACTION OF THE UTILIZABLE SUBSTANCE OF TOMATO WASTES COMING FROM THE CANNING INDUSTRY.
  Vásárhelyiné Perédi K., Daood H., Elías I., Central Food Research Inst.,
  Budapest and Simándi B., Budapest University of Technologies and Economics (Hungary)

• SUPERCRITICAL EXTRACTION OF PELLETIZED HOT PEPPERS USING CO2, AND CO2/ETHANOL MIXTURES.
  Del Valle J.M., Jimenez M., Napolitano P., Pontificia Universidad Católica de Chile, Santiago (Chile),
  Zetzl C. and Brunner G., T.U. Hamburg-Harburg (Germany)

• EXTRACTION NATURAL GREASE FROM RAW WOOL FIBER WITH SUPERCRITICAL FLUID.
  Eychenne V., Szisz S., Trabelsi F., Larrayoz M.A., and Recasens F.,
  Universitat Politècnica de Catalunya, Barcelona (Spain)
SUPERCRITICAL CO₂ POLLEN EXTRACT: A SELECTIVE EXTRACT USED IN COSMETICS.
Sala-Rosier C., Imbert R. and Vandermander J., Arkopharma, Carros (France)

SELECTIVITY OF EXTRACTION AND HINDRANCE FACTORS IN CHOLESTEROL EXTRACTION FROM WET EGG YOLK AND EGG POWDER USING SUPERCRITICAL CARBON DIOXIDE.
Sonam Dolma, Nagesha G.K., Udaya Sankar K. and Manohar B., Central Food Technological Research Institute, Mysore (India)

COUNTERCURRENT SUPERCRITICAL FLUID FRACTIONATION OF SPIRITS.
Senoráns F.J., Ibañez E., Ruiz-Rodriguez A., Tabera J. and Reglero G., Universidad Autónoma de Madrid (Spain)

EXTRACTION OF ASTAXANTHIN FROM HAEMATOCOCCUS PLUVIALIS BY SUPERCRITICAL CARBON DIOXIDE.
Majewski W., Perrut M., Séparex, Champigneulles (France) and Valderrama José O., University de la Serena, La Serena (Chile)

SF Fractionation

CURRENT INVESTIGATIONS ON MODELING SC-CO₂ FRACTIONATION OF ORANGE PEEL OIL USING A HYBRID NEURAL NETWORK.

TREATMENT AND RECYCLING OF THE WASTES FROM METALLURGICAL PROCESSES.
Majewski W., Perrut M., Separex, Champigneulles (France)

Mendes M.F., Pessoa F.L.P. and Uller A.M.C., Federal University of Rio de Janeiro (Brazil)

DEBITTERING OF JUICE AND EXTRACTION OF PEEL AROMAS FROM CITRON (Citrus Junos) WITH SUPERCRITICAL CARBON DIOXIDE.
Chun B.S., Lee S.-J. and Chun B.-S., Pukyong National University, Pusan (Korea) and Wilkinson G.T., University of South Australia (Australia)

HEXANE ELIMINATION FROM SOYBEAN OIL BY CONTINUOUS FRACTIONATION IN A COUNTERCURRENT TOWER BY SUPERCRITICAL CO₂.
Poletto M., Sesti Osseo L., Della Porta G. and Reverchon E., University of Salerno (Italy)
• **Enzymatic and Bioreactions**

- ACTIVITY CHANGES IN A CRUDE HYDROLYTIC ENZYME MIXTURE BY TREATMENT WITH SUPERCRITICAL CARBON DIOXIDE.
  Bauer C., Gamse T. and Marr R., T.U. Graz (Austria)  
- KINETIC MODELING OF THE ENZYMATIC ALCOHOLYSIS OF PALM KERNEL OIL IN SCCO₂.
  Zanoelo E.F., Oliveira D. and Oliveira J.V., URI-Erechim (Brazil)  
- TRANSMERIFICATION ENZYMATIC PROCESS WITH A DYNAMIC MEMBRANE REACTOR IN SUPERCRITICAL MEDIA.
  Lozano P., Iborra J.-L., University of Murcia (Spain), Belleville M.P. and Rios G.M., University of Montpellier 2 (France)  
- PRESSURE STABILITY OF LIPASES AND THEIR USE IN DIFFERENT SYSTEMS.
  Habulin M., Novak Z. and Knez Z., University of Maribor (Slovenia)  
- MICRO-ORGANISMS INACTIVATION BY SUPERCRITICAL CO₂ IN A SEMI-CONTINUOUS PROCESS.
  Elvassore N., Sartorello S., Spilimbergo S. and Bertucco A., University of Padova (Italy)  

• **Others**

- ON-LINE DIRECT IMPREGNATION OF NATURAL EXTRACTS.
  Majewski W. and Perrut M., Separex, Champigneulles (France)  
- SEPARATION OF THE ISOMERS OF B-CAROTENE WITH SUPERCRITICAL CO₂ AND SILICA GEL.
- THE EXTRACTION OF METHYLXANTHINES FROM NATURAL PRODUCTS IN A MICROEXTRACTION COLUMN USING SUPERCRITICAL CO₂ AND ETHANOL.
  Saldaña M.D.A., Rahoma M.S., State University of Campinas (Brazil), Zetzl C. and Brunner G., T.U. Hamburg-Harburg (Germany)  
- EXTRACTION OF METHYLXANTHINES FROM GUARAN SEEDS, MATE TEALEAVES IN A MICROEXTRACTION COLUMN USING SUPERCRITICAL CO₂.
  Saldaña M.D.A., Rahoma M.S., State University of Campinas (Brazil), Zetzl C. and Brunner G., T.U. Hamburg-Harburg (Germany)
FRACTIONATION PROCESSES & VARIOUS APPLICATIONS

Invited SUPERCritical FLUIDS AND MEMBRANES TECHNOLOGY: PERSPECTIVES AND APPLICATIONS.

Sarrade S., CEA, Pierrelatte (France), Rios G.M., ENS Chimie, Montpellier and Guizard C., LMPM, Montpellier (France)

- CONTINUOUS SUPercritical CO₂ EXTRACTION OF CONCENTRATING TOCOPHEROLS FROM MOLECULAR-DISTILLATED SOYBEAN OIL SCUM.
  Lee M.S., Lee H.Z., Chang C.-J., National Chung-Hsing University, Taiwan and Yang P.-W., Taiwan Sugar Company (Taiwan)

- OPTIMIZATION OF SC CO₂ FLUIDIFICATION AND FILTRATION OF VISCOS OILS.
  Schrive L., Rodríguez C., Sarrade S., CEA Pierrelatte and Rios G., E.N.S. de Chimie de Montpellier (France)

- SUPercritical FLUID SIMULATED MOVING BED FOR CHIRAL SEPARATION.
  Denet F., Hauck W., Nicoud R.-M., Novasep, Vandoeuvre-les-Nancy (France), Di Giovanni O., Mazzotti M. and Morbidelli M., ETH Zurich (Switzerland)

- STUDIES ON STEREOSELECTIVE SEPARATIONS OF THE "AZOLE" ANTIFUNGAL DRUGS USING SFC ON A SILICA-BASED HETEROSUBSTITUTED AMYLOSE.
  Thienpont A., Félix G., ENSCPB, Talence (France), Gal J. and Aeschlimann C., University of Colorado, Denver (USA)

- COUPLING OF PHOTOISOMERIZATION AND SUPercritical FLUID CHROMATOGRAPHY FOR DEVELOPING A NEW INTEGRATED SIMULATED MOVING BED REACTOR.
  Zetzl C., Peper S., Johanssen M., Brunner G., T.U. Hamburg-Harburg (Germany), Benkhedda J., Barth D., LTS/ENSIC, Nancy, Viriot M.L., DCPR/ENSIC, Nancy and Nicoud R.M., Novasep, Vandoeuvre les Nancy (France)

- SUPercritical FLUID EXTRACTION OF THE ORGANIC COMPOUNDS IN THE COLD BOKKEVELD METEORITE.
  Sephton M.A., Pillinger C.T. and Gilmour I., Open University, Milton Keynes (U.K.)

- PROGRESS IN RESEARCH AND APPLICATION OF SUPercritical FLUID EXTRACTION IN CHINA
  Xu Xuenong, Nanjing University and Jin Xuesong, Nantong Huaan Supercritical Fluid Extraction co. ltd., Haian County (China)

- RECOVERY OF URANIUM AND TRANSURANICS FROM STAINLESS STEEL SURFACES BY SUBCRITICAL CO₂.
  Murzin A., Kamachev V., Shadrin A., Babain V. and Smirnov I., Khlopin Radium Institute, St.Petersburg (Russia)
PCB SEPARATION FROM TRANSFORMER OILS. THEORETICAL APPROACH. CLEANING UP OF TRANSFORMER SOLID ELEMENTS BY SCCO.
Garay I., Acilu M. and Susaeta I., GAIKER, Zamudio (Spain)

STUDY ON REGENERATION OF ACTIVATED CARBON IN SUPERCRITICAL CARBON DIOXIDE.
Gao Y. and Liu Y., East China University of Science and Technology, Shanghai (China)

PREPARATIVE CHIRAL SUPERCRITICAL FLUID CHROMATOGRAPHY ON CYCLODEXTRIN BASED SUPPORTS: A PROMISING TOOL FOR PRODUCING ENANTIOMERS WITH HIGH PURITY.
Léveque H., Duval R., Edouard D., ChiralSep, La Frenaye (France) and Netter C., Gilson, Villiers-le-Bel (France)

SUPERCRITICAL FLUID SIMULATED MOVING BED CHROMATOGRAPHY: MODELLING, OPERATION AND SIMULATION.

INFLUENCE OF THE SPACER ARM CHEMICAL NATURE OF CYCLODEXTRIN BASED SUPPORTS IN SUPERCRITICAL FLUID AND LIQUID CHROMATOGRAPHY.
Léveque H., Duval R., Edouard D., ChiralSep, La Frenaye (France) and Netter C., Gilson, Villiers-le-Bel (France)

PACKED-COLUMN SUPERCRITICAL CHROMATOGRAPHY-ATOMIC EMISSION DETECTION OF LUBRICANT ADDITIVES.

EQUIPMENT (E)

DYNAMIC SIMULATION OF A RELIEF VALVE IN SUPERCRITICAL CONDITIONS.
Colussi I., Gallo V. and Arich de Finetti N., University of Trieste (Italy)

RECENT FINDINGS ON THE HYDRODYNAMICS OF SUPERCRITICAL FLUIDS.
Carlès P., University P & M Curie, Paris (France)

PHASE EQUILIBRIA & TRANSPORT PROPERTIES

Multiphase equilibria

MEASUREMENT OF CRITICAL POINTS OF MULTICOMPONENT SYSTEMS.
Haifei Zhang, Buxing Han, Zhengshan Hou and Zhimin Liu, Chinese Academy of Sciences, Beijing (China)

THE STUDY OF PHASE EQUILIBRIA FOR HYDROCARBON MIXTURES CONTAINING WATER.
Mirskaya V.A., Institute of Physics, Makhachkala (Russia)
- PHASE EQUILIBRIA OF ORGANIC SOLID SOLUTES AND SUPERCRITICAL FLUIDS.  
  Diefenbacher A. and Türk M., University of Karlsruhe (Germany)  

- A DATA BANK OF CRITICAL PROPERTIES AND PARAMETERS OF PENG-ROBINSON EQUATION OF STATE FOR AROMA COMPOUNDS.  
  Cerpa Chávez M., Esencias Naturales E.I.R.L., Lima (Peru)  

- SOLUBILITY OF NATURAL PRODUCTS IN SC CO₂ - DATA CONDENSED WITH ADACHI-LU EQUATION.  
  Sovová H., Institute of Chemical Process Fundamentals, Praha (The Czech Republic)  

- VOLUMETRIC EXPANSIONS OF SEVERAL SOLVENTS WITH CARBON DIOXIDE OR TRIFLUOROMETHANE.  
  Subra P. and Passarello J.-Ph., University of Paris XIII, Villetaneuse (France)  

- MODELING PHASE EQUILIBRIA FOR POLYMER AND SUPERCRITICAL CARBON DIOXIDE CONTAINING SYSTEMS OF INDUSTRIAL INTEREST.  
  Vieira de Melo S.A.B., Vieira de Melo R.L.F., Tiradentes University Institute of Science and Technology, Arcaju, Pessoa F.L.P., Federal University of Rio de Janeiro and Costa G.M.N., Federal University of Bahia (Brazil)  

- SOLUBILITY OF SURFACTANTS IN SUPERCRITICAL CARBON DIOXIDE.  
  Alessi A., Cortesi A., Kikic I., Puppis E. and Vecchione F., University of Trieste (Italy)  

- THERMODYNAMIC PROPERTIES OF SULFURHEXAFLUORIDE IN THE CRITICAL REGION.  
  Abbaci A., University of Annaba (Algeria)  

- HIGH PRESSURE APPARATUS FOR PHASE EQUILIBRIA MEASUREMENTS: APPLICATION TO THE SOLUBILITY OF FATTY ACID ETHYL ESTERS IN SUPERCRITICAL CARBON DIOXIDE.  
  Borg P., Jaubert J.-N., Barth D. LTS / ENSIC and Coniglio L., DCPR / ENSIC, Nancy (France)  

- MODELLING OF FLUID-SOLID EQUILIBRIUM OF DISPERSE DYES IN SUPERCRITICAL CARBON DIOXIDE.  
  Gordillo M. D. and Martinez de la Ossa E., University of Cadiz (Spain)  

- SOLUBILITY OF A PHARMACEUTICAL SOLID IN SUPERCRITICAL MIXTURES: MEASUREMENTS AND MODELLING.  
  Sauceau M., Letourneau I.J., Fages J., Ecole des Mines d’Albi-Carmaux and Richon D., Ecole des Mines de Paris, Fontainebleau (France)  

- SOIL DECONTAMINATION USING SUPERCRITICAL CO₂: DISTRIBUTION DATA ABOUT VARIOUS CHELATING AGENTS AND EXTRACTABLE METALCHELATES.  
  Gervais F., Perre C., Sarrade S., CEA Pierrelatte, Moszkowicz P., Barna L., INSA, Villeurbanne and Bargues S., S.T.M.I., Gif-sur-Yvette (France)  

- SOLUBILITIES OF URANIUM AND TRANSURANICS COMPLEXES IN SC-CO₂:  
  Shadrin A., Murzin A., Smirnov I., Babain V. and Kiseleva R., Khlopin Radium Institute, St. Petersburg (Russia)
• CO₂ -SOLUTE INTERACTIONS STUDY BY VIBRATIONAL SPECTROSCOPY.
  Lalanne P., Tassaing Th., Besnard M., Université de Bordeaux I and Cansell F.,
  ICMCB, Pessac (France)

• SOLUBILITY OF p-HYDROXYBENZOIC ESTERS IN SUPERCRITICAL CARBON DIOXIDE.
  Van Hees T., Piel G., Evrard B., Henry de Hassonville S., Delattre L., Institute of
  Pharmacy, Liege (Belgium), Alessi P. and Kikic I., University of Trieste (Italy)

• Transport

• SUPERCRITICAL FLUID ASSISTED CROSS-FLOW FILTRATION OF HIGHLY VISCOS LIQUIDS:
  Rodriguez C., Sarrade S., Schrive L., CEA Pierrelatte, Dresch-Basile M., ADEME,
  Angers and Rios G.M., E.N.S. Chimie de Montpellier (France)

• MASS TRANSFER FROM A SOLID-SPHERE TO A SUPERCRITICAL FLUID.
  Kalaga A. and Trebble M., University of Calgary (Canada)

• Others

• ACOUSTIC DETERMINATION OF THE CRITICAL PROPERTIES OF CO₂ SYSTEMS CONTAINING AMINES
  Ribeiro N. and Aguiar Ricardo A., Universidade Nova de Lisboa (Portugal)

• CRITICAL PHENOMENA IN RUBBER SOLUTIONS.
  Vshivkov S.A., Rusinova E.V., Shabanov P.M. and Guriev A.A., Ural State
  University, Yekaterinburg (Russia)