

1. Record Nr.	UNINA9910144330303321
Autore	Kopsch Heinz
Titolo	Thermal methods in petroleum analysis [[electronic resource] /] / Heinz Kopsch
Pubbl/distr/stampa	Weinheim, : VCH Verlagsgesellschaft mbH, c1995
ISBN	1-281-75856-6 9786611758561 3-527-61515-6 3-527-61514-8
Descrizione fisica	1 online resource (529 p.)
Disciplina	665.5028 665.538
Soggetti	Thermal oil recovery Thermal analysis Electronic books.
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references (p. [499]-506) and index.
Nota di contenuto	Thermal Methods in Petroleum Analysis; Contents; 1 Introduction; 2 Methods and instrumentation; 3 Thermal analysis on model substances; 3.1 Thermogravimetry (TGA); 3.1.1 Thermogravimetry in an inert atmosphere; 3.1.2 Simulated distillation; 3.1.3 Thermogravimetry in an oxidizing atmosphere; 3.1.4 Isothermal thermogravimetry; 3.1.5 Experiments using the simultaneous thermal analyzer; 3.2 Differential scanning calorimetry on model substances; 3.2.1 DSC in an inert atmosphere; 3.2.2 DSC in an oxidizing atmosphere; 3.3 Reaction kinetics; 3.3.1 Theoretical basis 3.3.1.1 Method according to ASTM E 698-79.3.1.2 Method according to Borchardt and Daniels; 3.3.1.3 Method according to Flynn and Wall; 3.3.1.4 Method according to McCarthy and Green; 3.3.2 Kinetic investigations on model substances; 3.3.2.1 DSC experiments according to ASTM E 698-79 heat of vaporization of n-alkanes; 3.3.2.2 Pyrolysis kinetics according to ASTM E 698-79; 3.3.3 DSC oxidation kinetics according to ASTM E 698-79; 3.3.4 Kinetics according to Borchardt and Daniels; 3.3.5 TGA kinetics according to Flynn and Wall;

3.3.6 TGA kinetics according to McCarty and Green
4 Thermoanalytical investigations on petroleum and petroleum products
4.1 Crude oils (degasified crudes); 4.2 Refinery residues; 4.2.1 Description and characterization of the samples; 4.2.2 Implementation and evaluation of tests; 4.2.2.1 Deviations in thermogravimetry; 4.2.3 Thermogravimetry in an inert atmosphere; 4.2.3.1 Directly measured index numbers; 4.2.3.2 Derived index numbers; 4.2.3.3 Simulated distillation; 4.2.3.4 Directly measured index numbers in comparison with the simulated distillation; 4.2.3.5 Derived index numbers for practical application; 4.2.4 Thermogravimetry in air
4.2.4.1 Directly measured index numbers
4.2.5 Correlations of analytical data with index numbers from thermogravimetry; 4.2.6 Simulated thermal cracking by TGA; 4.2.6.1 Index numbers from simulated cracking; 4.2.6.2 Correlation of index numbers from simulated cracking with analytical data; 4.2.7 Start temperature of the cracking process in an inert atmosphere; 4.2.8 Differential scanning calorimetry (DSC); 4.2.8.1 Experiments in argon at atmospheric pressure; 4.2.8.2 Experiments in methane at 10 bar pressure; 4.2.8.2.1 Reaction enthalpy from tests at 10 bar pressure
4.2.8.3 Start temperatures of the cracking process at different pressures
4.2.8.4 Correlation of kinetic parameters with analytical data; 4.2.9 Conclusions from experiments on refinery residues; 4.2.9.1 Thermogravimetry; 4.2.9.2 Reaction kinetics; 4.2.9.3 Correlation of data from thermoanalysis with analytical data; 4.3 Investigations on bitumen; 4.3.1 Description and characterization of the samples; 4.3.2 Thermoanalytical investigations; 4.3.2.1 Thermogravimetry in inert gas; 4.3.2.1.1 Correlation of index number from thermogravimetry with consistency data
4.3.2.1.2 Correlation index numbers with analysis data

Sommario/riassunto

This exceptional book reveals the results of twelve years of extensive thermoanalytical investigations into petroleum and its products with the aid of 236 tables, 284 diagrams and 159 references. Firstly, the methods employed in obtaining thermoanalytic data, in particular thermogravimetry, differential thermal analysis and differential scanning calorimetry, are presented, and the underpinning theory described. Next, the data obtained from model substances, i.e. pure hydrocarbons, is displayed; it is then explained how multicomponent hydrocarbon systems may be characterized by comparis
