Select Thermodynamic Models for Process Simulation

A Practical Guide using a Three Steps Methodology

Jean-Charles de Hemptinne, Jean-Marie Ledanois, Pascal Mougin and **Alain Barreau**
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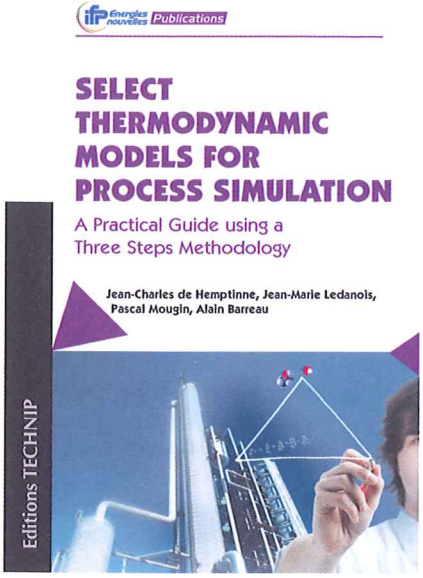

The selection of the most adequate thermodynamic model in a process simulation is an issue that most process engineer has to face sooner or later.

This book, conceived as a practical guide, aims at providing adequate answers by analysing the questions to be looked at. The analysis (first chapter) yields three keys that are further discussed in three different chapters. (1) A good understanding of the properties required in the process, and their method of calculation is the first key. The second chapter provides to that end in a synthetic manner the most important equations that are derived from the fundamental principles of thermodynamics. (2) An adequate description of the mixture, which is a combination of models and parameters, is the second key. The third chapter makes the link between components and models, both from a numerical (parameterisation) and physical (molecular interactions) point of view. Finally, (3) a correct view of the phase behaviour and trends in regard of the process conditions is the third key. The fourth chapter illustrates the phase behaviour and makes model recommendations for the most significant industrial systems. A decision tree is provided at the end of this chapter. In the last chapter, the key questions are reviewed for a number of typical processes.

This book is intended for **process engineers**, who are not specialists of thermodynamics but are confronted with this kind of problems and **need a reference book**, as well as **process engineering students** who will find an original approach to thermodynamics, complementary of traditional lectures.

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Odabir termodinamičkog modela za simulaciju procesa

Praktični priručnik koji koristi metodu pristupa u tri koraka

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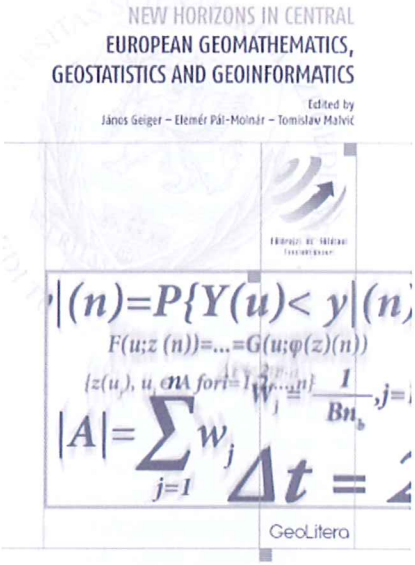
Odabir najprikladnijega termodinamičkog modela u simulaciji procesa je problem s kojim će se prije ili kasnije morati suočiti svaki procesni inženjer. Namjena ove knjige, koja je zamišljena kao praktični vodič, je ponuditi adekvatne odgovore analizirajući odabrana pitanja. Analiza (prvo poglavlje) daje tri rješenja koja su podrobnije objašnjena u tri različita poglavlja. (1) Dobro razumijevanje svojstava potrebnih za proces i njihova metoda izračuna je prvo rješenje. Drugo poglavlje daje na sintetički način najvažnije jednadžbe koje su izvedene iz temeljnih principa termodinamike. (2) Odgovarajući opis kombinacije modela i parametara, je drugo rješenje. Treće poglavlje povezuje komponente i modele i s numeričkog (parametrizacija) i fizičkog (molekularne interakcije) gledišta. Konačno, (3) treće rješenje je ispravno gledanje obzirom na fazno ponašanje i trendove u odnosu na uvjete procesa. Četvrto poglavlje ilustrira fazno ponašanje i daje prijedloge modela za većinu značajnih industrijskih sustava. Na kraju ovoga poglavlja prikazano je stablo odlučivanja. U zadnjemu poglavlju, načinjen je pregled ključnih pitanja za niz tipičnih procesa.

Ova knjiga je namijenjena procesnim inženjerima koji nisu stručnjaci za termodinamiku ali se susreću s takvom problematikom i potreban im je priručnik. Potrebna je i studentima procesnog inženjeringa koji će u njoj pronaći originalan pristup termodinamici, kao dopunu klasičnim predavanjima.

New horizons in Central European geomathematics, geostatistics and geoinformatics?

(Editors János Geiger, Elemér Pál Molnar, Tomislav Malvić)



In the March 2012, Geolitera publishing house printed the new book from the field of geomathematics. The place of publishing is University of Szeged in Hungary. The book includes selected studies (papers) presented in the 2011 on the 3rd Croatian-Hungarian and 14th Hungarian geomathematical congress, held in Morahalom (Hungary). All selected papers had been additionally internationally reviewed and eventually collected in the book through several parts. Those chapters (parts) are (1) Theoretical thoughts, (2) Geostatistical case studies in reservoir characterisation, (3) Multivariate statistical approaches and (4) Geoinformatics.