



# Adsorption Refrigeration Technology: Theory and Application

By Ruzhu Wang, Liwei Wang, Jingyi Wu

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**Adsorption Refrigeration Technology: Theory and Application** By Ruzhu Wang, Liwei Wang, Jingyi Wu

**Gives readers a detailed understanding of adsorption refrigeration technology, with a focus on practical applications and environmental concerns**

Systematically covering the technology of adsorption refrigeration, this book provides readers with a technical understanding of the topic as well as detailed information on the state-of-the-art from leading researchers in the field. Introducing readers to background on the development of adsorption refrigeration, the authors also cover the development of adsorbents, various thermodynamic theories, the design of adsorption systems and adsorption refrigeration cycles. The book guides readers through the research process, covering key aspects such as: the principle of adsorption refrigeration; choosing adsorbents according to different characteristics; thermodynamic equations; methods for the design of heat exchangers for adsorbents; and the advanced adsorption cycles needed. It is also valuable as a reference for professionals working in these areas.

- Covers state-of-the art of adsorption research and technologies for relevant applications, working from adsorption working pairs through to the application of adsorption refrigeration technology for low grade heat recovery
- Assesses sustainable alternatives to traditional refrigeration methods, such as the application of adsorption refrigeration systems for solar energy and waste heat
- Includes a key chapter on the design of adsorption refrigeration systems as a tutorial for readers new to the topic; the calculation models for different components and working processes are also included
- Takes real-world examples giving an insight into existing products and installations and enabling readers to apply the knowledge to their own work

Academics researching low grade energy utilization and refrigeration; Graduate students of refrigeration and low grade energy utilization; Experienced engineers wanting to renew knowledge of adsorption technology, Engineers working at companies developing adsorption chillers; Graduate students working on thermally driven systems; Advanced undergraduates for the Refrigeration

Principle as a part of thermal driven refrigeration technology.

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**Adsorption Refrigeration Technology: Theory and Application** By Ruzhu Wang, Liwei Wang, Jingyi Wu **Bibliography**

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## **Editorial Review**

From the Back Cover

In the late 20th century, the ever-growing awareness of the environmental damage which the use of CFCs causes to the ozone layer, as well as the increasing pressure to find alternative energy sources beyond fossil fuels, has rekindled the interest in the development of adsorption refrigeration technology. Adsorption refrigeration is driven by low grade heat, such as solar thermal energy, waste heat from industrial processes or power engines, thus it is a type of energy saving technology. Adsorption refrigeration is also a green technology because of the refrigerants it utilizes are normally natural refrigerants such as water, methanol and ammonia.

The authors in Shanghai Jiao Tong University have worked on the adsorption refrigeration for over 20 years, including adsorption mechanisms (both physical and chemical adsorption), thermodynamic cycles, and also thermal designs of adsorption refrigeration systems. They developed the composite adsorbents, constructed the zeolite or silica gel-water adsorption chillers, and also composite adsorbent-ammonia adsorption refrigerators, they even commercialized the small scale silica gel-water adsorption chillers. On the basis of the achievements of the academics worldwide and their own experience on the research, the authors in Shanghai Jiao Tong University have systematically summarized the technology for the adsorption refrigeration in this book.

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- Exercises and solution manual for every chapter available on the Wiley Companion Website

As a comprehensive treatment of the topic, *Adsorption Refrigeration Technology: Theory and Application* is ideal for academics researching low grade energy utilization and refrigeration, graduate students of refrigeration and low grade energy utilization and experienced engineers wanting to renew knowledge of adsorption technology. The book will also better equip engineers working at companies developing adsorption chillers and graduate and senior undergraduate students working on thermally driven systems. The book is also a good reference for thermal storage researches as sorption thermal storage is one hot research topic recently.

About the Author

**Ruzhu Wang, Liwei Wang, Jingyi Wu, Shanghai Jiao Tong University, China**

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