

Review of the Book

PRINCIPLES OF ENHANCED HEAT TRANSFER, by Ralph L. Webb, John Wiley & Sons, New York, 1994, 556 pages.

Enhanced heat transfer is becoming an increasingly important discipline in the field of heat transfer as evidenced by this new book on the subject. *Principles of Enhanced Heat Transfer* gives a very broad and detailed treatment of heat transfer augmentation, covering laminar and turbulent single-phase flows, pool boiling, flow boiling and film condensation. The book draws extensively on Professor Webb's long experience and research activities in single- and two-phase heat transfer augmentation.

The book begins with description of many types of heat transfer augmentations, ranging from the original geometries patented decades ago up to the latest geometries now commercially available. An in depth review of performance evaluation criteria and how to utilize them is then presented. After this, the book covers single-phase heat transfer augmentation with individual chapters on plate-and-fin extended surfaces, externally finned tubes, inserts, internally finned tubes, and integral roughness. Fouling research on enhanced surfaces in single-phase flows is then surveyed. Enhanced two-phase heat transfer is dealt with in chapters on pool boiling, vapor phase condensation,

convective vaporization and convective condensation. The book concludes with chapters on electric field enhancement techniques, simultaneous heat and mass transfer (only processes with non-condensable gases, but not enhanced boiling or condensation or saturated mixtures) and additives for enhancing heat transfer in gases and liquids.

The book provides extensive test data for heat transfer augmentations and, significantly, contains many theoretical and empirical methods that have been developed for their application. Although their limits of application, e.g. range of Re , Pr , and so forth, have not always been cited. For the important areas of heat transfer augmentation of single-phase flows and condensation, there is finally a comprehensive review of these subjects. In summary, *Principles of Enhanced Heat Transfer* is recommended as a reference book for both practicing engineers and heat transfer researchers.

Reviewer
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