

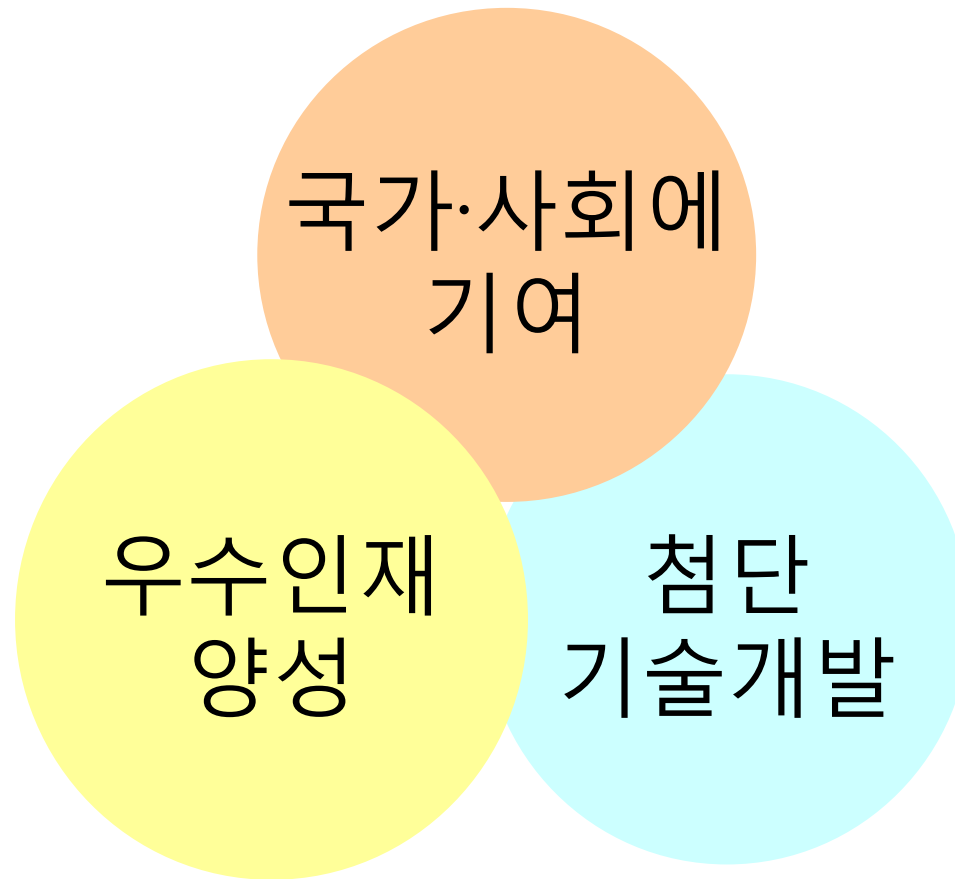
최고 수준의 열전달 이론, 실험, 수치계산을 배울 수 있는 실험실

열전달실험실

공대 2호관 9405실

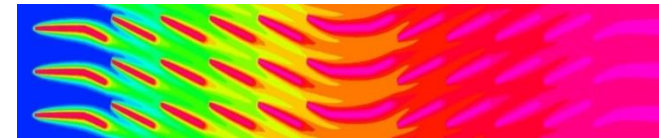
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열전달실험실 사명



흰-관 열교환기 개발

- 공랭식 열교환기 설계, 평가, 이론 연구 실험실
- 2011 친수성 이론 보유
- 2008 라디에이터 설계 기술 자동차 적용
- 2003 미국, 유럽, 중국 특허 보유
- 2001 Int. J. Heat Transfer Eng. 표지
- 1993 한국형 에어컨 흰 실용화
- 세계적 수준의 이론 및 특허 보유
- 전세계 우리 실험실의 기술 기여



열전달 실험실 보유기술



US006644389B1

(12) **United States Patent**
Kang et al.

(10) **Patent No.:** US 6,644,389 B1
(45) **Date of Patent:** Nov. 11, 2003

(54) **FIN TUBE HEAT EXCHANGER**

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Moo-hwan Kim, Pohang (KR)

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(*) **Notice:** Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 0 days.

(21) **Appl. No.:** 09/936,048

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§ 371 (c)(1),
(2), (4) **Date:** Dec. 17, 2001

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PCT Pub. Date: Sep. 14, 2000

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Mar. 9, 1999 (KR) 1999-7772

(51) **Int. Cl.:** F28F 13/02; F28D 1/04

(52) **U.S. Cl.:** 165/146; 165/151; 165/181

(58) **Field of Search:** 165/151, 181,
165/146

(56) **References Cited**

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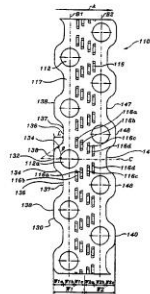
Primary Examiner—Leonard Leo

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ABSTRACT

A fin tube heat exchanger includes plate-shaped elongated fin members spaced at regular intervals, in parallel with one another. Each fin member has a fin base, through-holes in two rows in a longitudinal direction of the fin member, and raised portions with legs. Heat exchanger tubes are inserted into the through-holes. Each fin member has flat areas at a front and middle regions of a front half and a middle region of a rear half. The raised portion disposed at a rear region of the front half and a front region of the rear half has the legs inclined by a predetermined angle with respect to a traverse centerline which passes through the center of an adjacent through-hole of the front row. The distance from the centerline generally increases with a direction of airflow. A larger volume of air can be directed toward the vicinity of the tubes of the rear row. Each fin member has a front edge and a rear edge. The front edge has protruding portions and recessed portions. The protruding portion of the front edge substantially corresponds to the recessed portion of the rear edge disposed on the same centerline.

14 Claims, 3 Drawing Sheets



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Single and Double-Pipe Heat
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Natural-Drop Oscillations in
Horizontal Single Boiling
Channel

Three-Dimensional Fin-Tip
Boundary Condition
Correction II

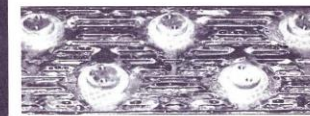
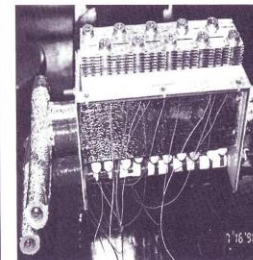
Switchover Control
Strategies for Improving
Performance of Refrigeration
Systems under Off-Design
Conditions

REGSP—A Computer
Program for Simulation of
Flow-Through Boiler Start-
up Behavior

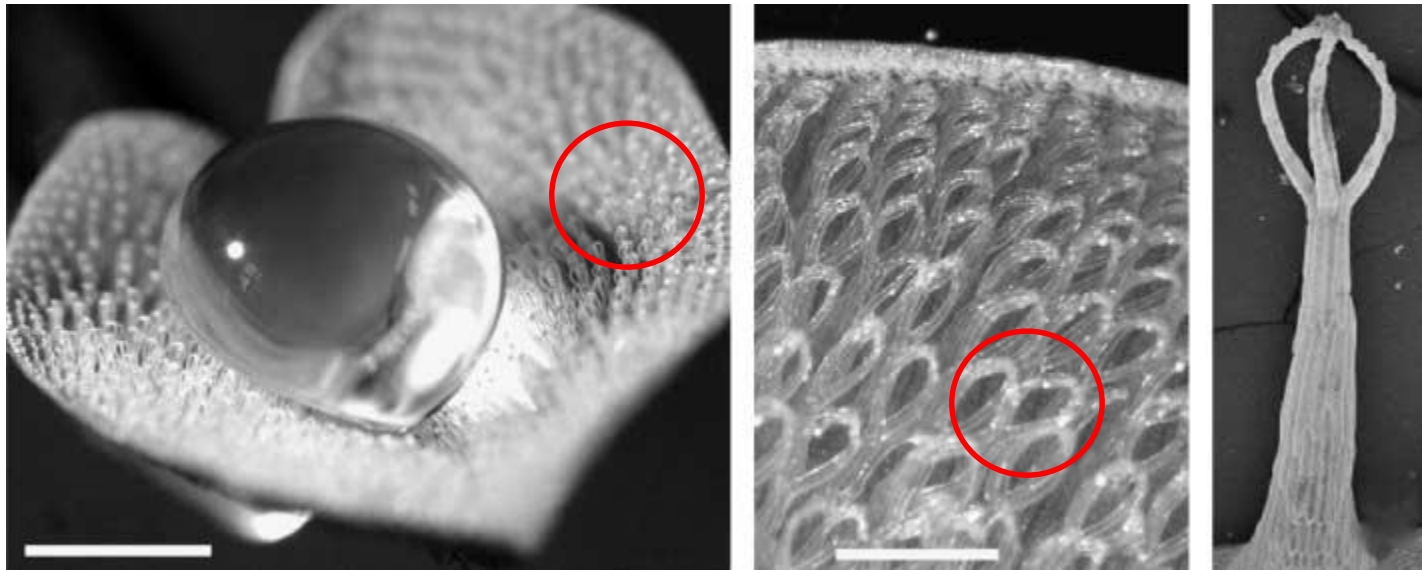
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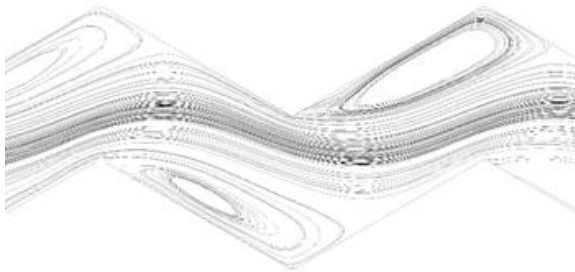
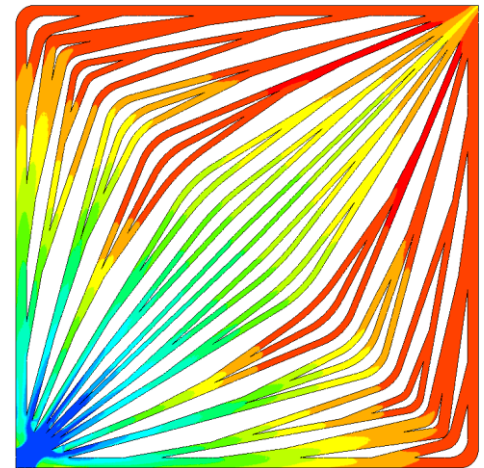
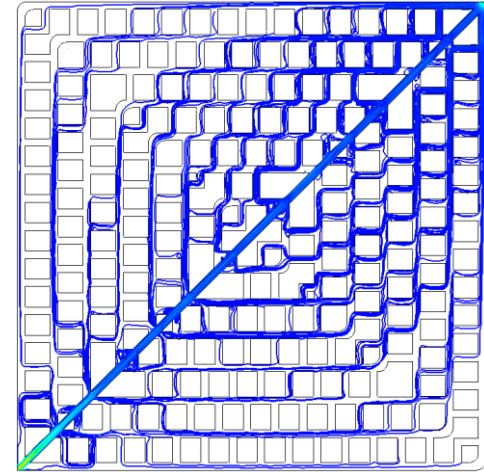
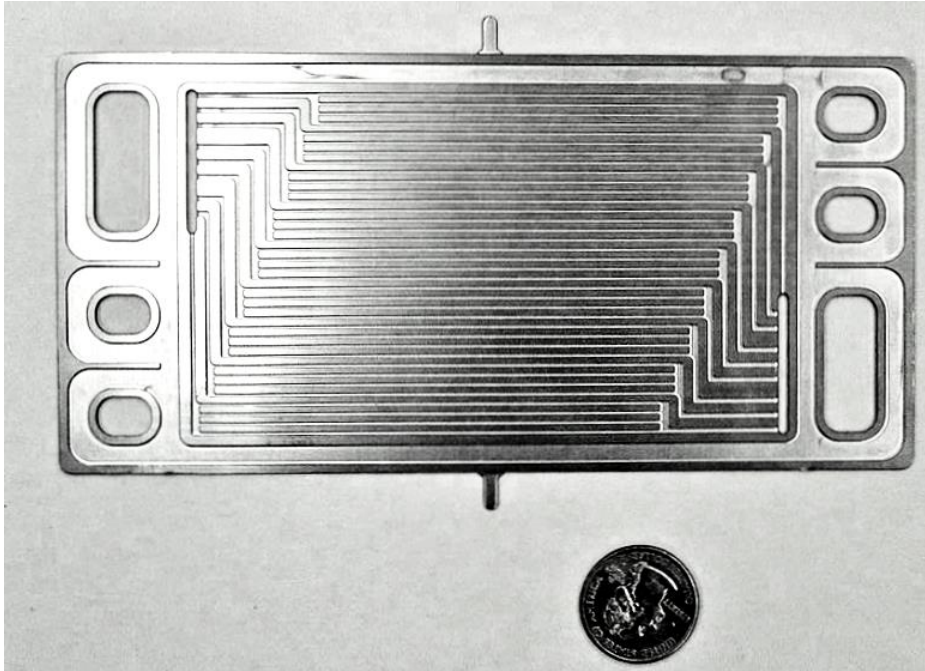
표면에너지 및 젖음성 제어



Hairs on the leaves of the water fern genus *Salvinia* are multicellular surface structures. In (a) a water droplet on the upper leaf side of *Salvinia biloba* is shown. (b,c) The crown-like morphology of the hairs of *S. biloba* (Koch et al. 2009).
Bar 1 cm, 600, 100 μm



연료전지 전극판 설계



화장품병 불량 개선

