

## IC@50 Media Overview

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### What:

The Computer History Museum (CHM) launched its Salute to the Semiconductor program in January 2009. The celebration of the 50th anniversary of the integrated circuit (IC@50) provides a week of events (May 2 – 8), including the National Inventors Hall of Fame annual awards Gala, pioneer lectures, a plaque laid at the original Fairchild site and Silicon Valley VIP receptions.

### IC@50 – May 2009

The integrated circuit is the foundation for modern life. Isaac Asimov once described the innovation of the integrated circuit as “*the most important moment since man emerged as a life form.*” It is central to our mission to tell these ground-breaking stories of technological progress, and to put them in context for all of us today.

The program, beginning May 2<sup>nd</sup>, to mark the technology’s 50th year, will be punctuated with capstone events at CHM featuring semiconductor pioneers Jay Last, Jay Lathrop, Gordon Moore, and Charles Phipps, as well as National Semiconductor CEO Brian Halla.

The year-long program, highlighted by events and commemorative activities, will focus on the history, growth of the integrated circuit and the semiconductor and its impact on society.

### Who:

The Computer History Museum is partnering with the Chemical Heritage Foundation and the IEEE Santa Clara Valley Section to celebrate the 50th anniversary of these transformative developments.

Major funding for the Salute to the Semiconductor is generously provided by the Gordon and Betty Moore Foundation and the Intel Corporation. Additional funding for the IC@50 events is provided by the National Semiconductor Foundation, a charitable fund at the Silicon Valley Community Foundation, and Silicon Industry Legacy Fund, CHM.

### History:

Efforts to integrate entire circuits into a single block of semiconductor to reduce the size, as well as improve the cost and reliability of electronic systems, began in the early 1950s. The first practical approaches to integrated circuits emerged later that decade. In 1958, Texas Instruments demonstrated a single chip amplifier, and in 1960, Fairchild Semiconductor developed a technology that made such circuits practical for high volume production. The IC, at the heart of every electronic product made today, is a direct descendent of this 50-year-old innovation.

### From "Tinkertoys" to "Solid Circuits": Microcircuitry in the Late 1950s

The chip emerged from Cold War demands for improved reliability, performance, and miniaturization of electronics systems. The later 1950s witnessed diverse efforts to pack components into tiny modules and to integrate multiple components in a single slice of semiconductor material. Fierce technological competition between these different approaches to microcircuitry – from “Tinkertoys” to Molecular Electronics to “Solid Circuits” – resulted in the planar integrated circuit of today.

Michael Riordan, co-author of “Crystal Fire: The Birth of the Information Age,” will survey the personalities and technologies behind these early efforts at microcircuitry by Bell Labs, IBM, RCA, Texas Instruments, and Westinghouse.

In excerpts from a video interview, Dr. Thomas Stanley will recount some of the pioneering microcircuitry work at RCA in the late 1950s. A panel of speakers will then present and discuss their own experiences in this fast-moving, competitive race to the future. Topics will include the first counter to be fabricated on a silicon chip at Bell Labs (1955), early steps in photolithography at the Army’s Diamond Ordnance Fuse Lab (DOFL), and the breakthrough contribution of Jack Kilby’s “Solid Circuits” that propelled Texas Instruments to a world leader in integrated circuits.

### **The Planar Integrated Circuit: Building the Future at Fairchild Semiconductor**

Jack Kilby’s Solid Circuits established that all the components required to make general-purpose electronic circuits could be fabricated using a common semiconductor material. However their hand-wired interconnections made them difficult and expensive to produce in high volume.

Seeking to solve reliability problems with transistors at Fairchild Semiconductor, co-founder Jean Hoerni invented a new manufacturing approach: the planar process. Fairchild’s Director of R & D, Robert Noyce, realized that the Hoerni’s process would allow interconnecting multiple transistors on one chip in a batch process that also made them more reliable and lower in cost.

The planar integrated circuit, first created by Jay Last’s team at Fairchild, remains the basis of the modern semiconductor industry and ranks with the printing press, the steam engine, and wireless communications in terms of global social impact. Four speakers will describe the personal, technical, and business stories associated with bringing Fairchild Micrologic, the first planar integrated circuit family, to market.

### **Events:**

Each evening event will be attended by 400 Silicon Valley professionals, media and the community supporting the history of technology.

#### **May 6<sup>th</sup> | Reception: 6:00pm | Program: 7:00pm From "Tinkertoys" to "Solid Circuits": Microcircuitry in the Late 1950s**

**Michael Riordan**, co-author of “Crystal Fire”, will review the broad efforts toward microminiaturization of the early 1950s.

- **John Hollar**, CHM CEO will chair a panel discussion between:
- **L. Arthur D'Asaro**, former senior scientist at Bell Telephone Laboratories
- **Jay W. Lathrop**, former DOFL and TI scientist, Professor Emeritus Clemson University
- (video) **Dr. Tom Stanley**, will recount some of the pioneering microcircuitry work at RCA in the late 1950s
- **Charles E. Phipps**, former VP Marketing, TI and General Partner, Sevin Rosen Funds

#### **May 7<sup>th</sup> | Museum Tours**

- Intel Museum (VIP 10:30am, General 3:30pm)
- Computer History Museum (General 2:30pm, 3:30pm, 4:30pm)

**May 8<sup>th</sup> | Plaque Unveiling Ceremony**

**3:30 pm** Take Shuttle Bus from CHM

**4:00 pm** IEEE Commemorative Plaque Unveiling at original Fairchild site

**May 8<sup>th</sup> | Reception: 6:00pm | Program: 7:00pm**

**The Planar Integrated Circuit: Building the Future at Fairchild Semiconductor**

- **Christophe Lécuyer**, author of Making Silicon Valley, on Jean Hoerni and his development of the planar process.
- **Leslie Berlin**, author of the biography of Robert Noyce, “The Man Behind the Microchip,” on Noyce and his conception of the planar integrated circuit.
- **Gordon E. Moore**, Fairchild and Intel co-founder and director of R&D on the early days of the industry and the background to the contributions of Hoerni and Noyce.
- **Jay T. Last**, Fairchild co-founder and leader of the Micrologic team on the creative efforts required to turn Noyce’s concept into a working product.

**PR Contact:**

Fiona Tang

[ftang@computerhistory.org](mailto:ftang@computerhistory.org)

650-810-1036