

# Woodstock Plus 20: High-Tc Today and Tomorrow

Paul M. Grant

IBM Research Staff Member, Emeritus

Press Conference  
2007 APS March Meeting  
3:00 PM - 5:00 PM  
Monday, 5 March, CCC Room 208  
Denver, Colorado

<http://www.w2agz.com/woodstock07.htm>

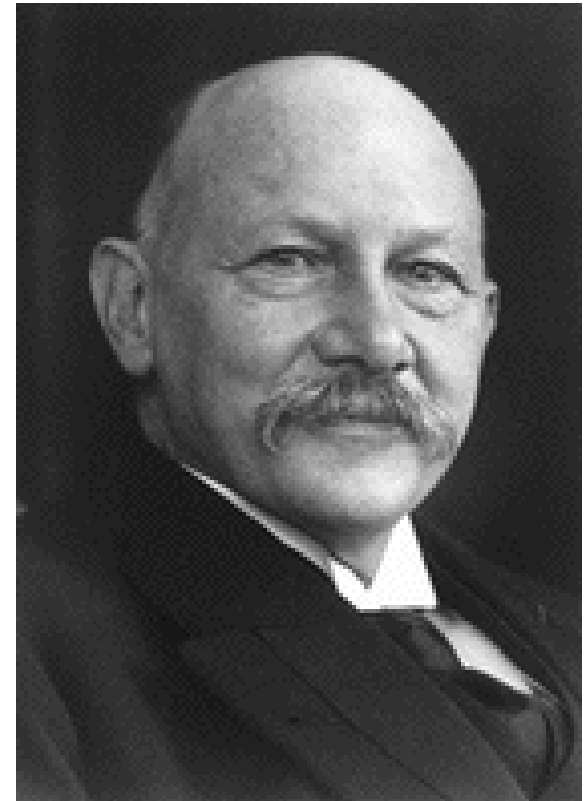


# Fathers of Cryogenics



**Dewar**

CH <sub>4</sub>	112 K
O	90
N <sub>2</sub>	77
Ne	27
H <sub>2</sub>	20
He	4.2



**Kammerlingh-Onnes**

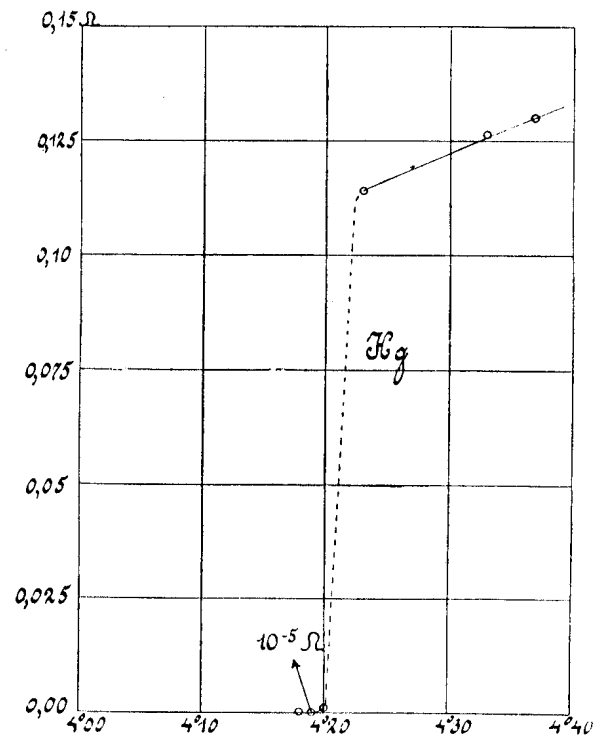
# 1911

## A Big Surprise!

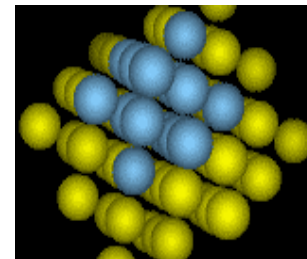
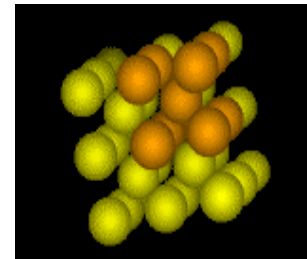
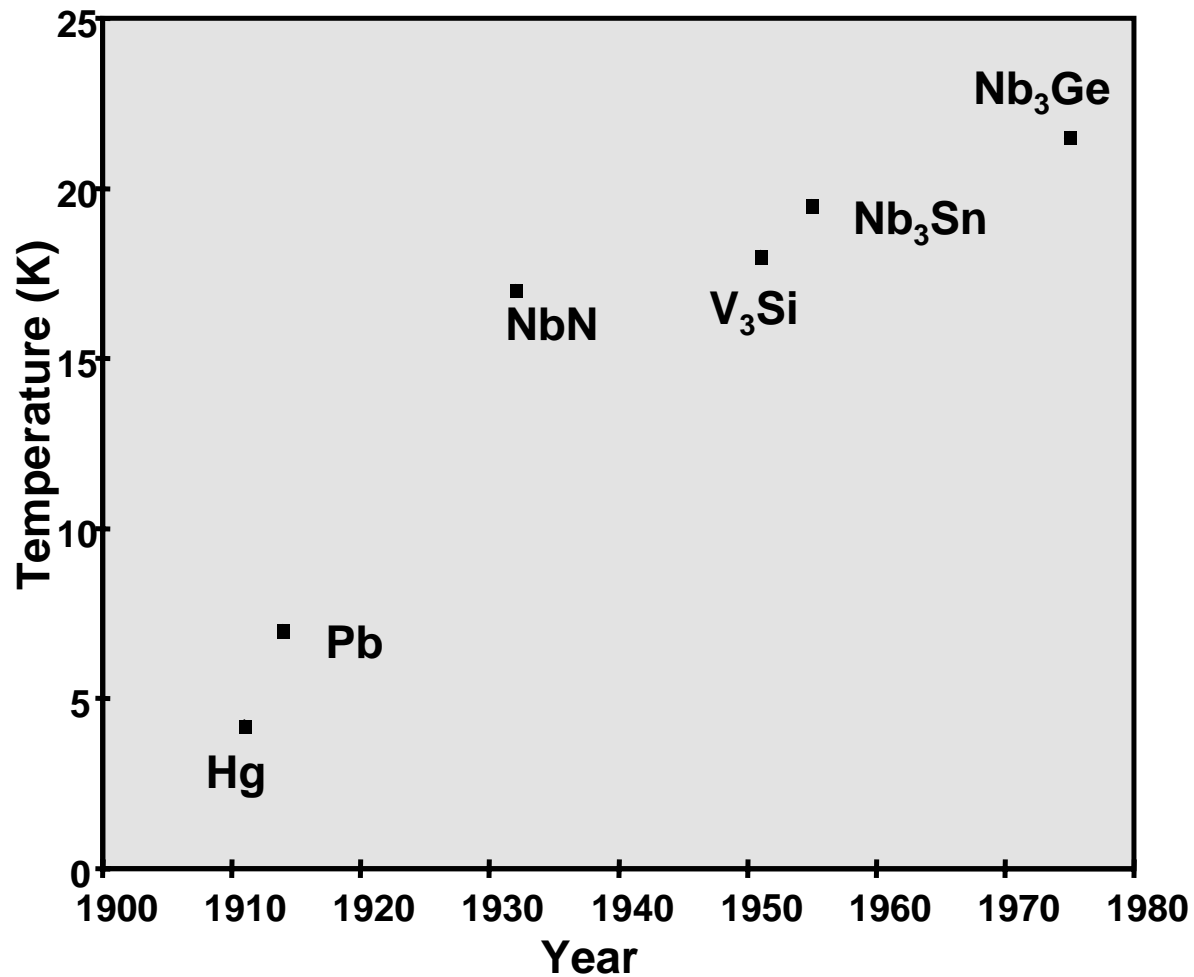


Thus the mercury at 4.2 K has entered a new state, which, owing to its particular electrical properties, can be called the state of *superconductivity*

H. Kamerlingh-Onnes (1911)



# $T_c$ vs. Year: 1911 - 1980

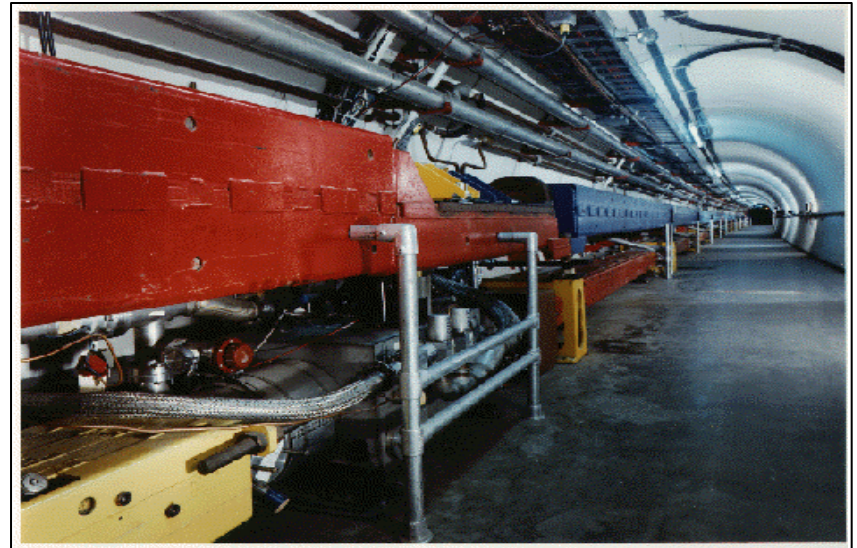


Cubic Metals

# MRI & "Big Physics"



**Magnetic Resonance Imaging**  
**Philips**



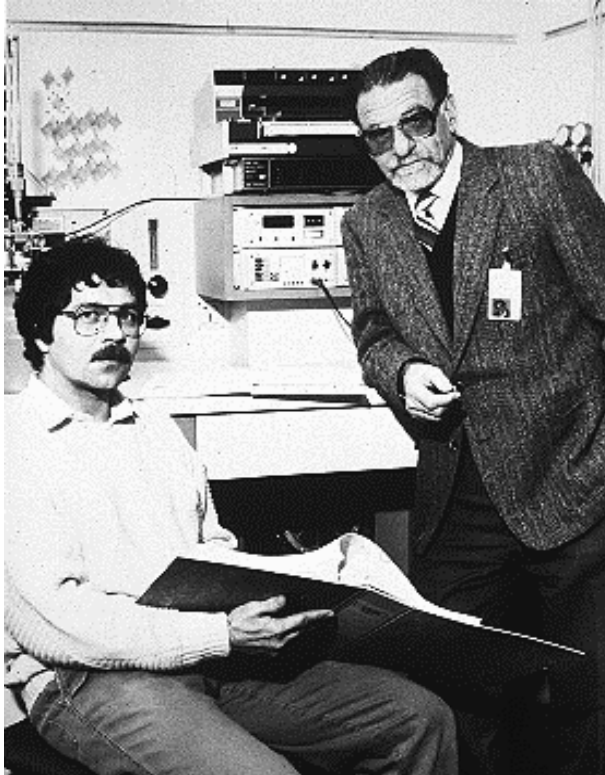
**Tevatron**  
**Fermi National Laboratory**

# Brookhaven Cable-Late 70s

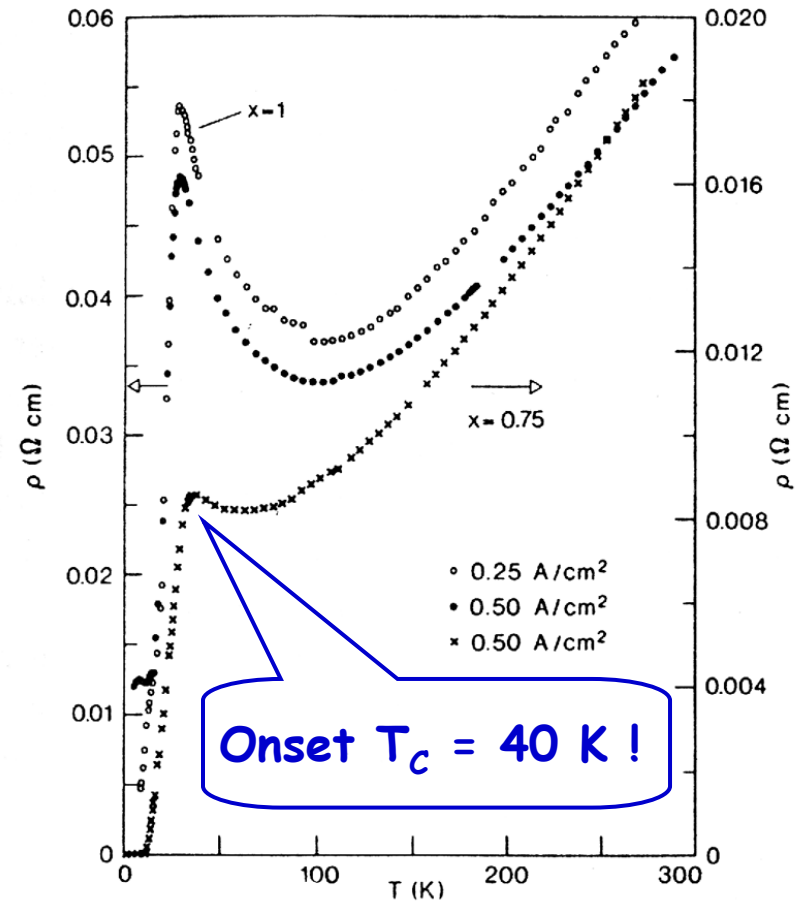


# 1986

## Another Big Surprise!



**Bednorz and Mueller**  
**IBM Zuerich, 1986**





# Physicists' Night Out!

WHAT IS MORE EXCITING THAN  
**High T<sub>c</sub> — Physics Art!**

PAM DAVIS  
STEVE KIVELSON  
DAN ROKHSAR and  
SHAHAB ETEMAD  
invite you to

**LIMELIGHT**  
AN EVENING OF MUSIC AND ART

**FOR DANCING**  
**AT NEW YORK'S MOST FASHIONABLE NIGHTCLUB**

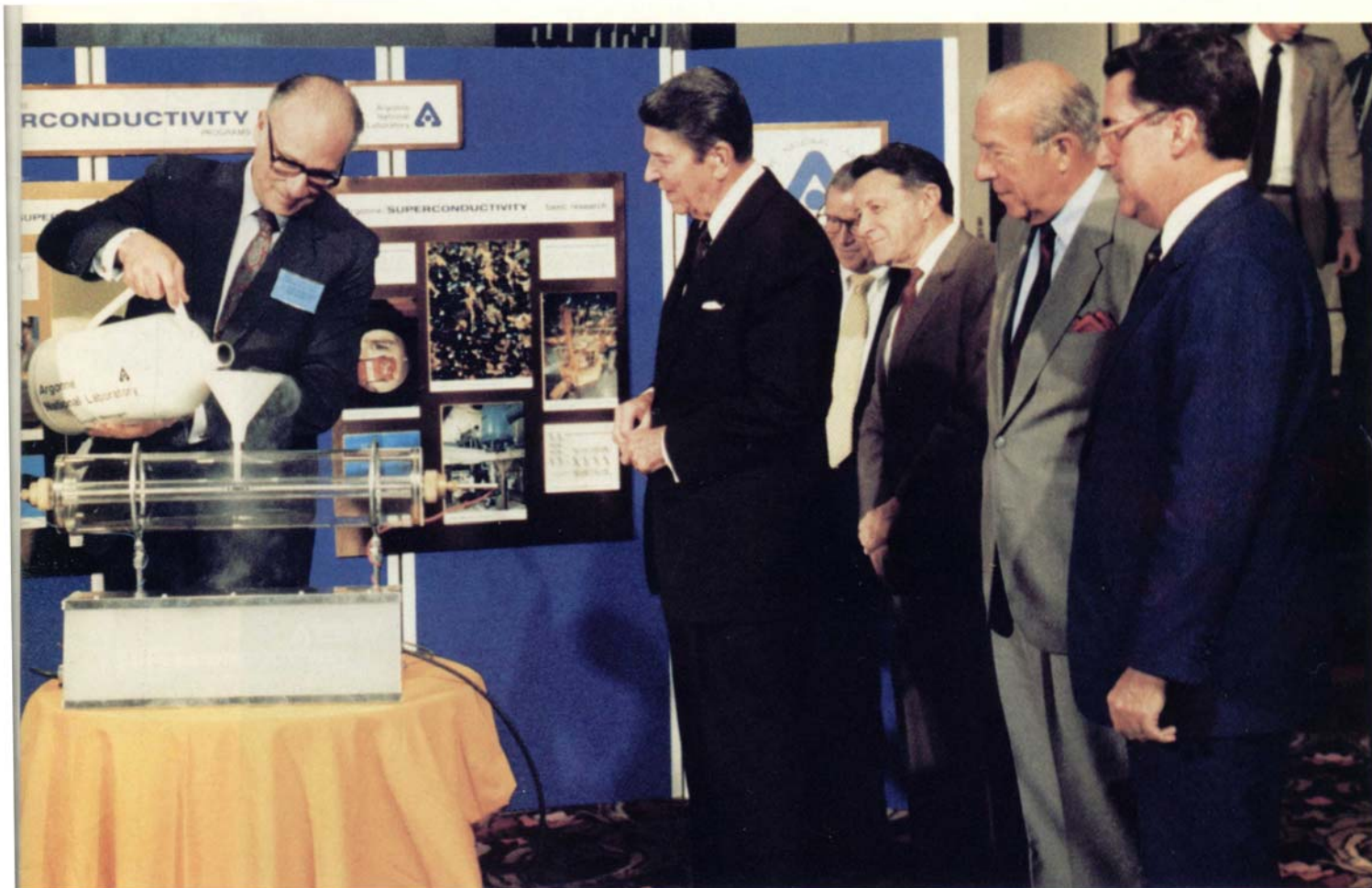
● ● ● ● ● THURSDAY, MARCH 19, 1987 ● ● ●  
DOORS OPEN 10:00 PM SHARP  
**DANCING ALL NIGHT**

COMPANYS/ARTY ADMISSION FOR V.C. AND A GUEST WITH THIS INVITATION  
\$10.00 PER PERSON

THIS INVITATION CANNOT BE SOLD OR TRANSFERRED

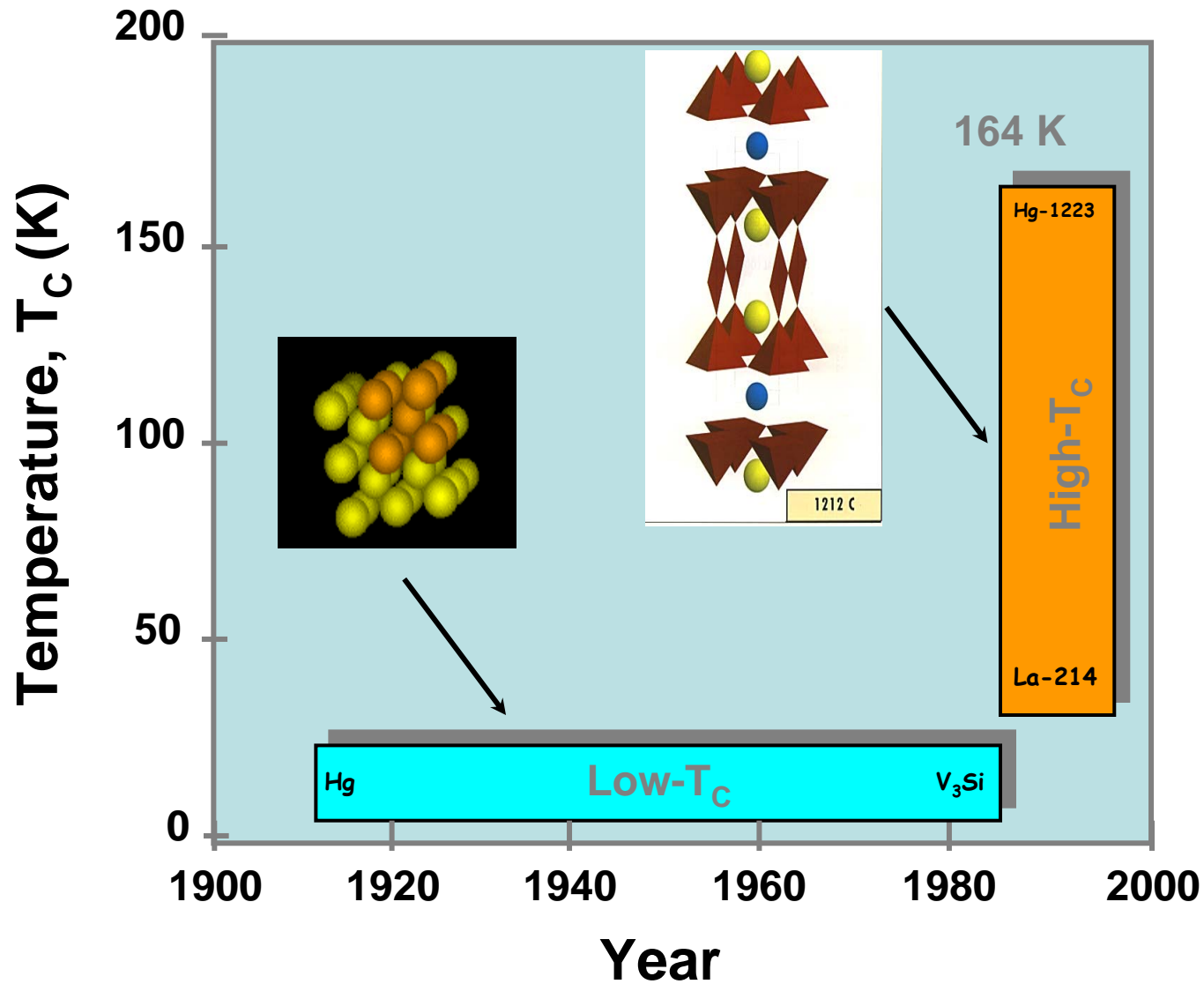


# "The Great Communicator"



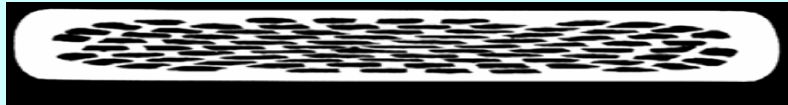
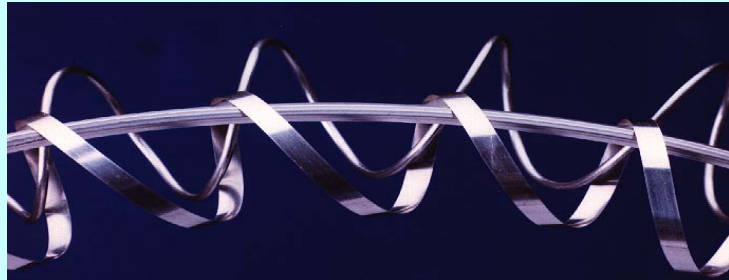
*Alan Schriesheim, Director of Argonne National Laboratory, demonstrates superconductivity to the President, Chief of Staff Howard Baker, Secretary of Defense Caspar Weinberger, Secretary of State George Shultz and Secretary Herrington.*

# HTSC Today



# Practical HTSC Wire is Available

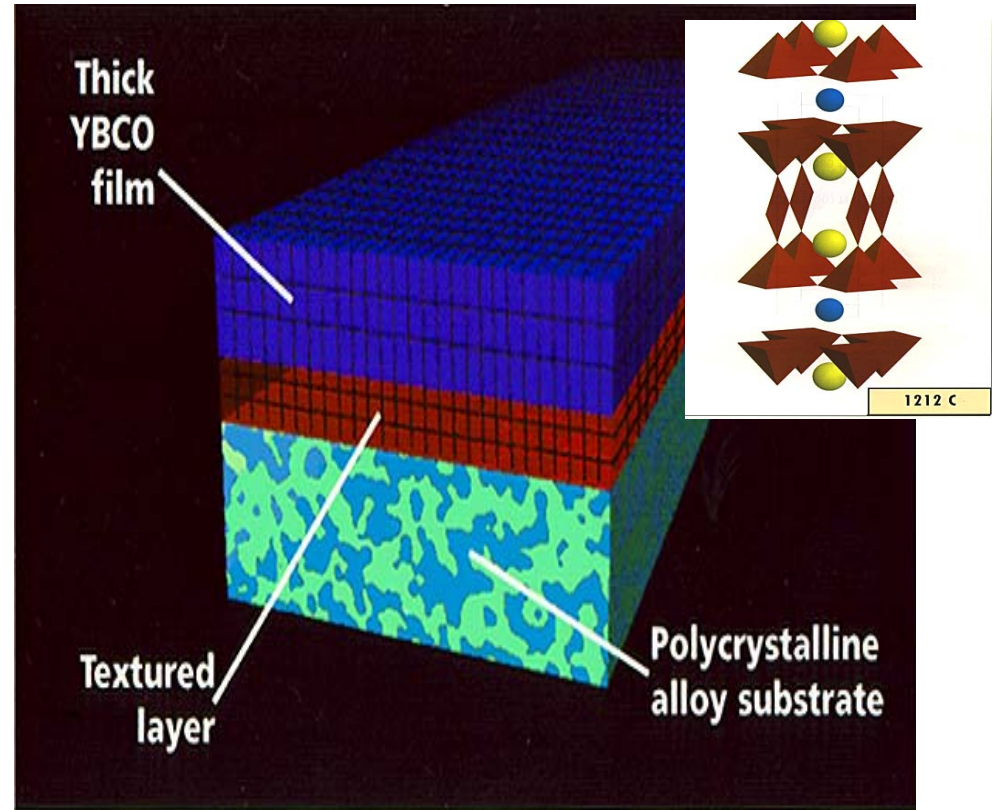
Gen 2



Gen 1



2223

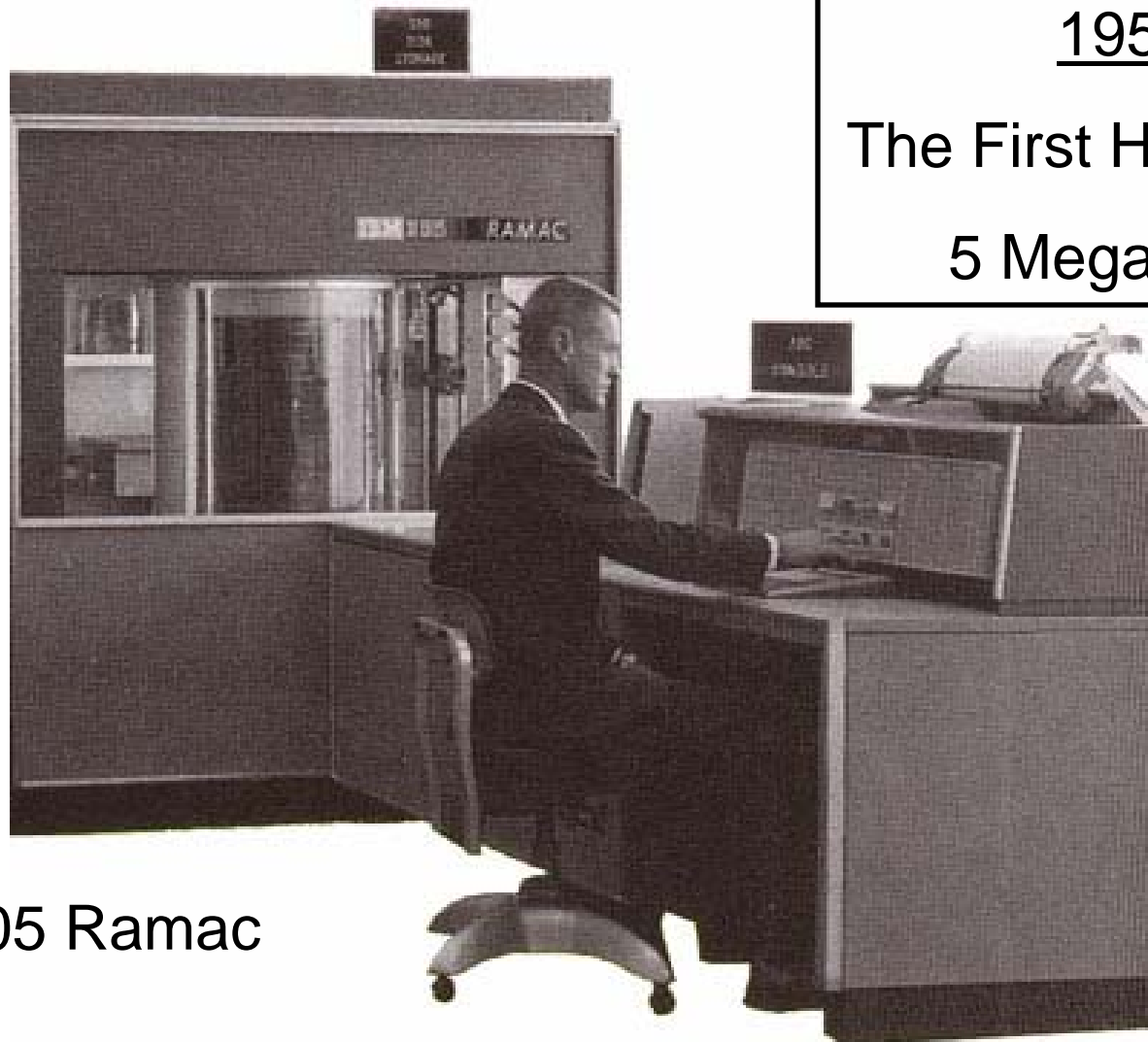


# Woodstock + 20

## Where are we?

- There remains no (generally accepted) theory to explain high- $T_c$
- Nonetheless, there exists now a high performance wire technology that works and is available in long lengths
- Yet no HTSC company is making a profit

...and old technology can go on and  
on and on...



IBM 305 Ramac

1956

The First Hard Drive

5 Megabytes



# ...Almost 50 Years Later



2004  
The Apple iPod  
40 GB

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8000 times the  
Ramac in your  
hand

# ...51 Years Later



**2007**

The Apple iPod  
**80 GB**

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**16000** times the  
Ramac in your  
hand



"You can't always get  
what you want..."



"...you get what you need!"

