

The Materials Genome Initiative

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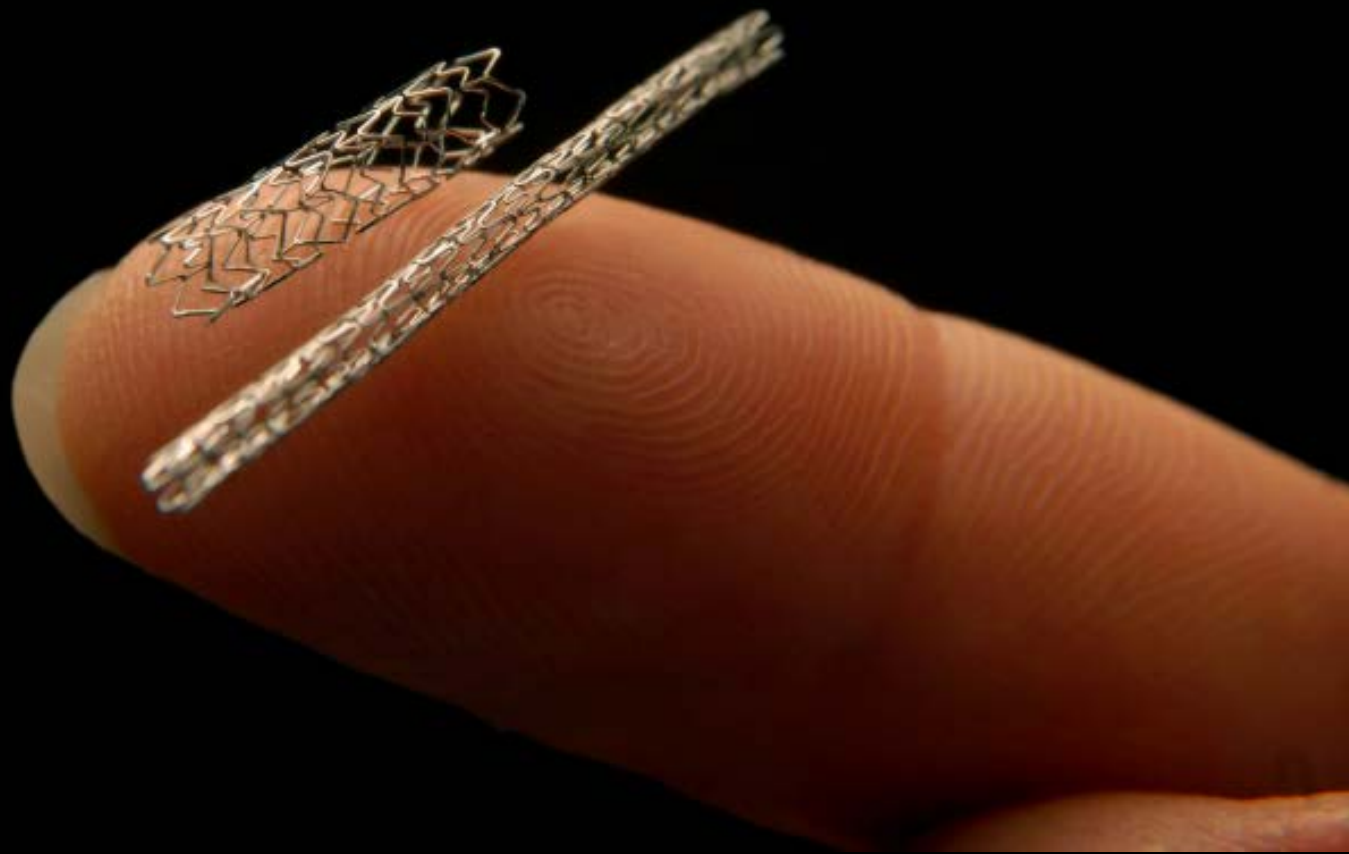
November 19, 2013



Outline

- Motivation for MGI
- MGI Components
- Recent Activities and Highlights
- MGI Strategic Plan







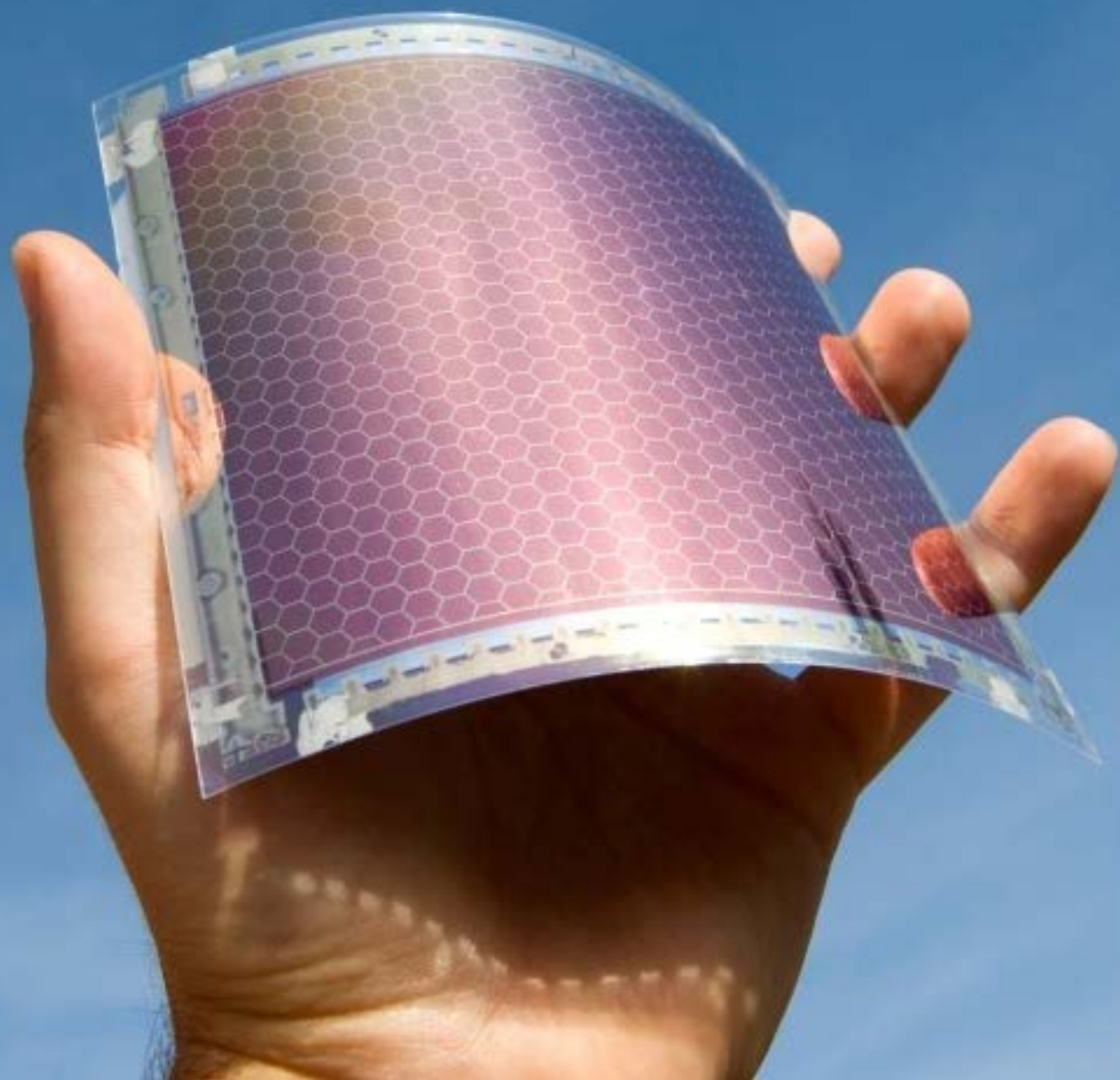




SOME OF

50 LBS





Materials Throughout History



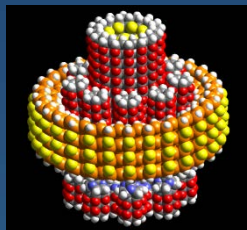
Stone Age



Bronze Age



Plastic Age



Computational
Materials
Design Age



Iron Age



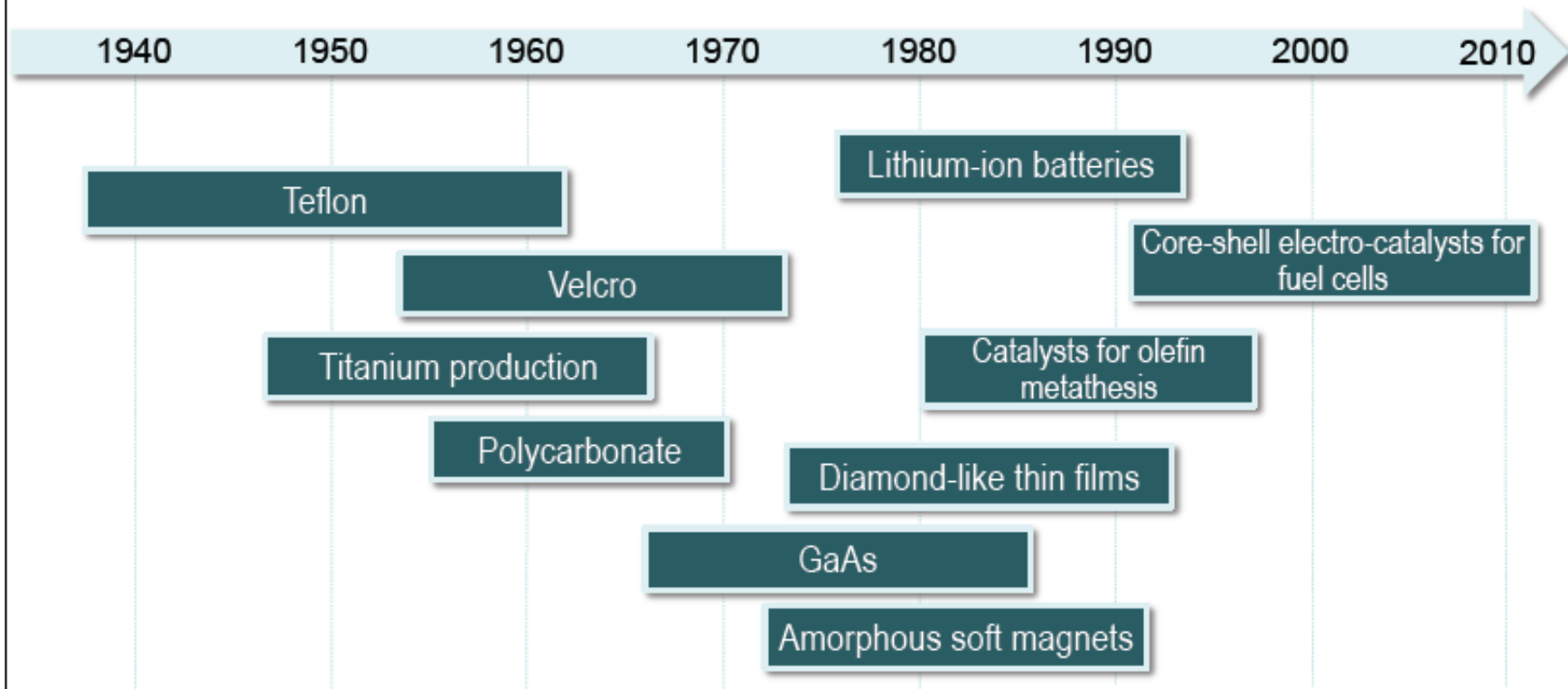
Industrial Age



Silicon Age

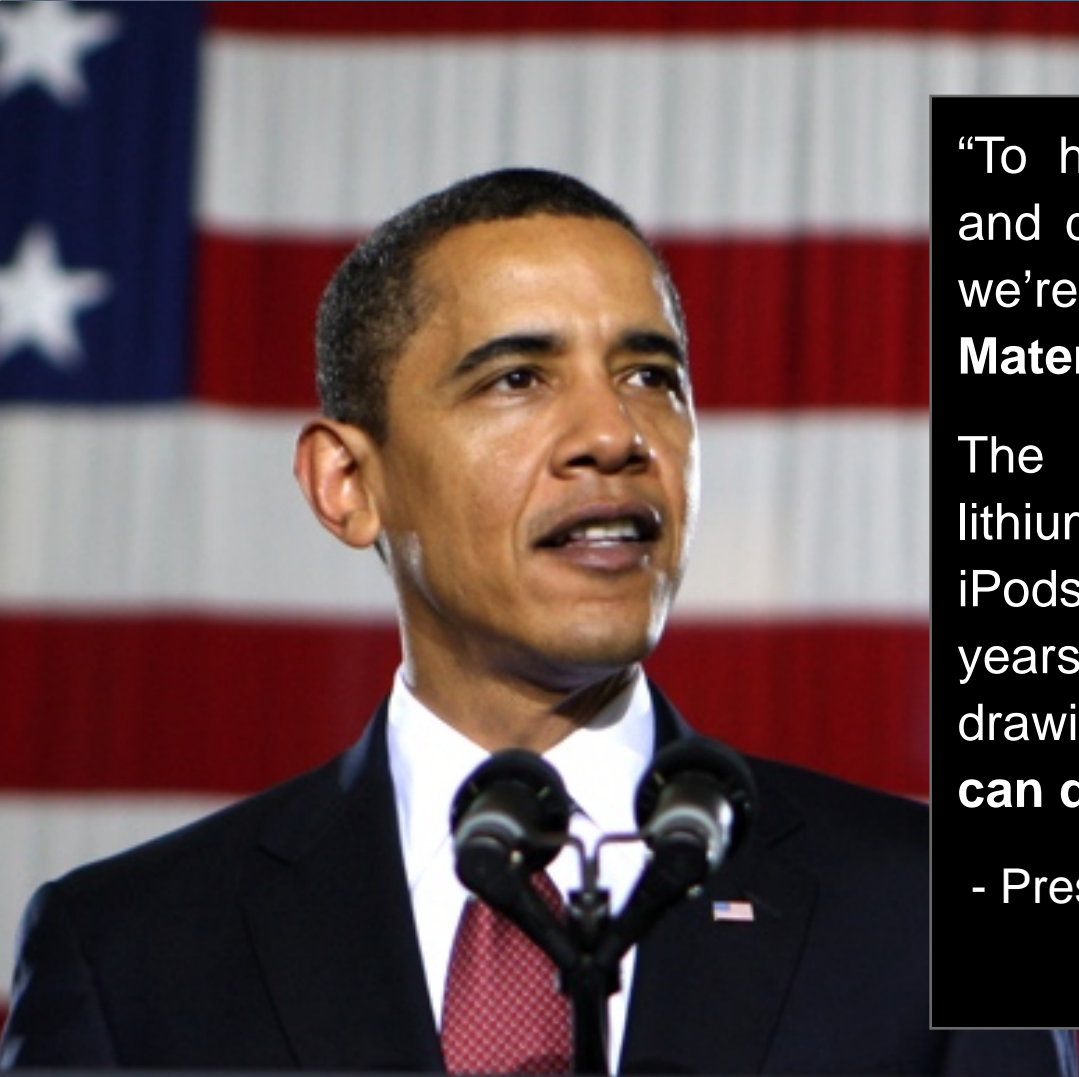


20+ Years to Market



After Gerd Ceder (MIT); materials information from T. W. Eagar and M. King, *Technology Review* 98 (2), 42 (1995).
Catalysis information from R. Schrock et al. and R. Adzic et al.



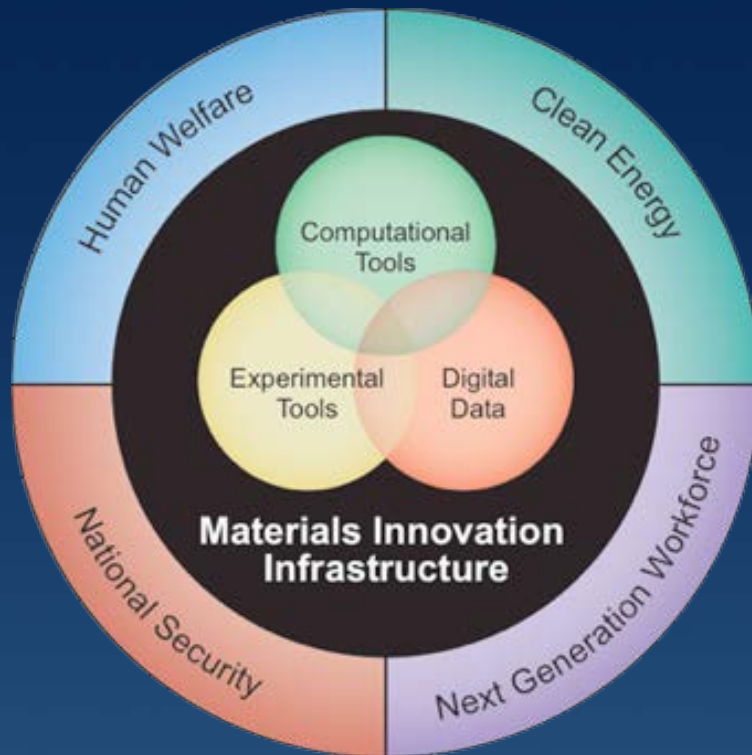


“To help businesses discover, develop, and deploy new materials twice as fast, we’re launching what we call **the Materials Genome Initiative**.

The invention of silicon circuits and lithium ion batteries made computers and iPods and iPads possible, but it took years to get those technologies from the drawing board to the market place. **We can do it faster.**”

- President Obama (June 2011)

MGI - Two Core Objectives



1. Infrastructure



2. Culture



Highlights of Activities

- \$63M in FY 2012 (DOE, NSF, DOD, NIST)
- Leveraging existing investments and building a strong tie-in to other Federal programs (National Nanotechnology Initiative, National Network for Manufacturing Innovation, open data)
- Over 60 institutions have pledged financial resources
- Commitments from more than 30 universities (curricula, degree programs, etc.)
- Chartered a formal NSTC Subcommittee for active interagency coordination
- Multiple stakeholder meetings on MGI (NSF, DOD, NIST, DOE, scientific societies)



June 24, 2013 – 2 Year Anniversary

- NIST announced \$25 million for new Center of Excellence
- Start of a Materials Innovation Accelerator Network
- Harvard/IBM Debut Database of 2.3 million new materials
- TMS/MRS Joint Survey on Data
- ASM/NIST partnership on open data repository pilot
- DARPA, US Army, NASA Partner on Data Infrastructure
- Lawrence Berkeley National Laboratory/Intermolecular form Public-Private Collaboration
- 8 universities announce efforts to improve MGI education
- 5 universities commit to host regional meetings



MGI Strategic Plan

- Goals:

- Integrate Experiment, Computation, and Theory
- Build the Foundation for a Materials Data Infrastructure
- Enable a Paradigm Shift in Culture
- Equip the Next-Generation Workforce

- National Needs: Clean Energy, National Security, Human Welfare, and Economic Prosperity

- Science and Technology Grand Challenges: identified by community in 9 materials classes and applications



For more information:
www.whitehouse.gov/mgi

The screenshot shows a web browser window displaying the White House website for the Materials Genome Initiative. The browser's address bar shows the URL www.whitehouse.gov/mgi. The page header includes the White House logo and navigation links such as "BLOG", "PHOTOS & VIDEO", "BRIEFING ROOM", "ISSUES", "the ADMINISTRATION", "the WHITE HOUSE", and "our GOVERNMENT". A search bar is located in the top right corner.

The main content area features the Materials Genome Initiative logo and the title "Materials Genome Initiative". Below the title is a navigation menu with links for "About", "Goals", "Examples", "News & Announcements", "Federal Programs", "External Stakeholder Activities", and "Contact Us".

The primary text on the page reads: "To help businesses discover, develop, and deploy new materials twice as fast, we're launching what we call the Materials Genome Initiative. The invention of silicon circuits and lithium-ion batteries made computers and iPods and iPads possible -- but it took years to get those technologies from the drawing board to the marketplace. We can do it faster."

Below the text is a quote: "- President Obama, June 2011 at Carnegie Mellon University". To the right of the text is a photograph of President Barack Obama in a factory setting, wearing safety glasses and holding a long, glowing material component, with a woman in a red shirt and another man in a suit standing nearby.

About the Materials Genome Initiative

MATERIALS GENOME

