

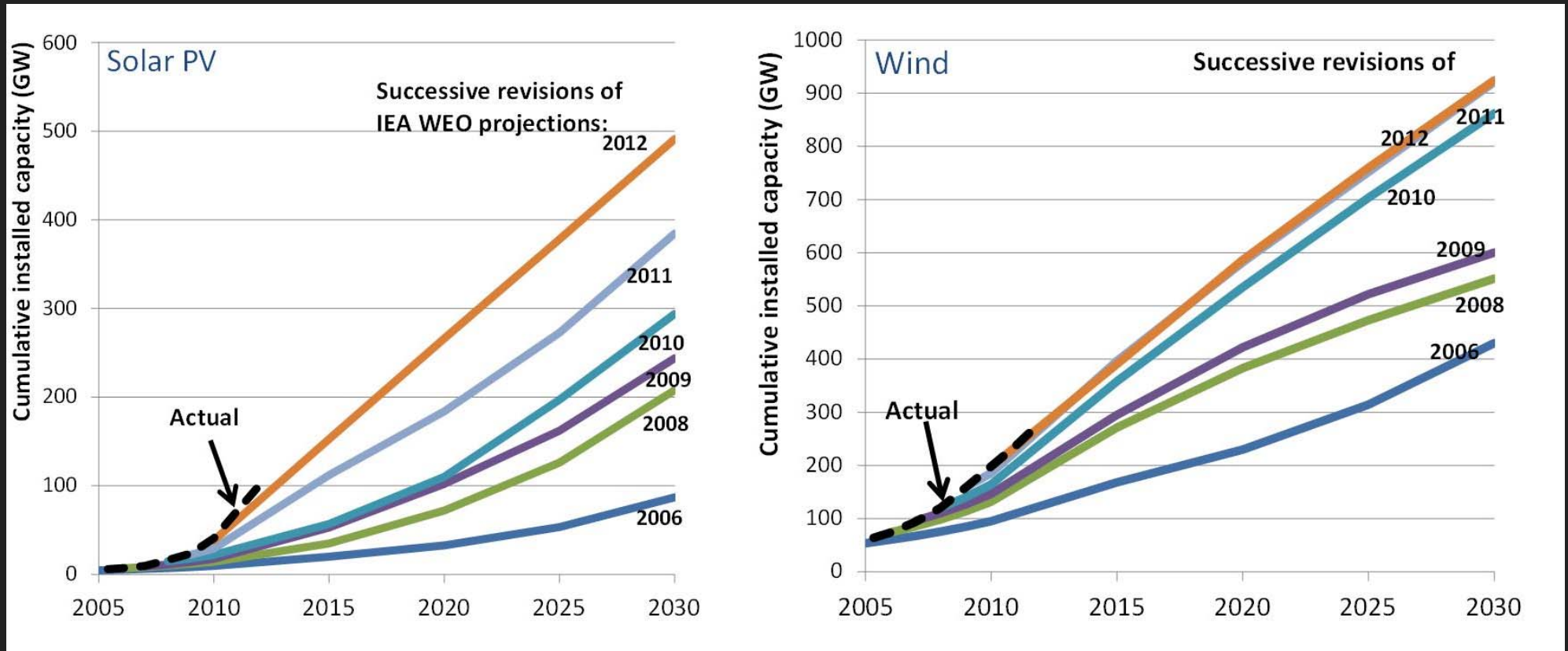
Business opportunities for advanced solar technology - market perspective

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“LEARNING AND INNOVATION
GO HAND IN HAND. THE
ARROGANCE OF SUCCESS IS TO
THINK THAT WHAT YOU DID
YESTERDAY WILL BE
SUFFICIENT FOR
TOMORROW.”

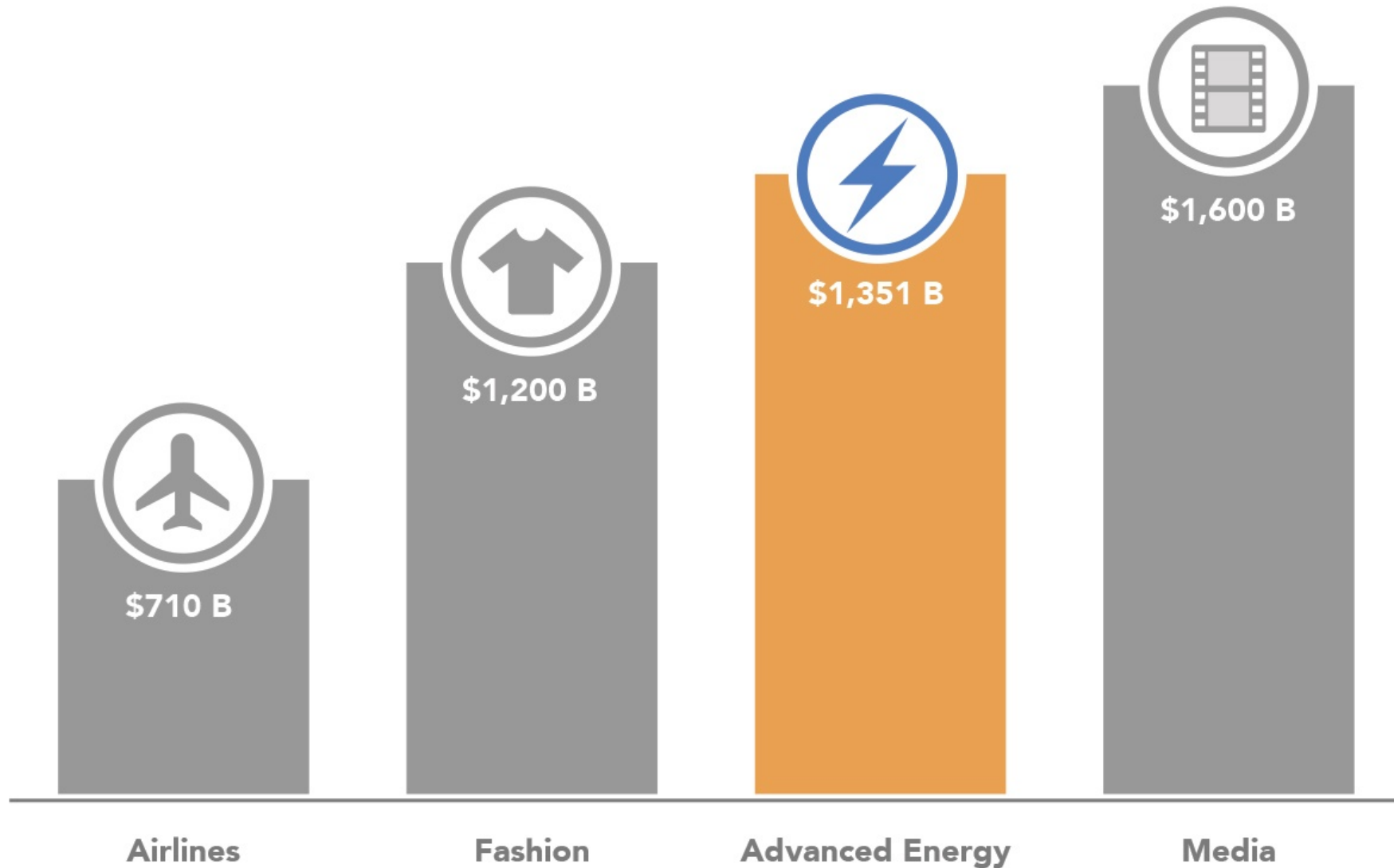
William
Pollard

LINEAR VS EXPONENTIAL



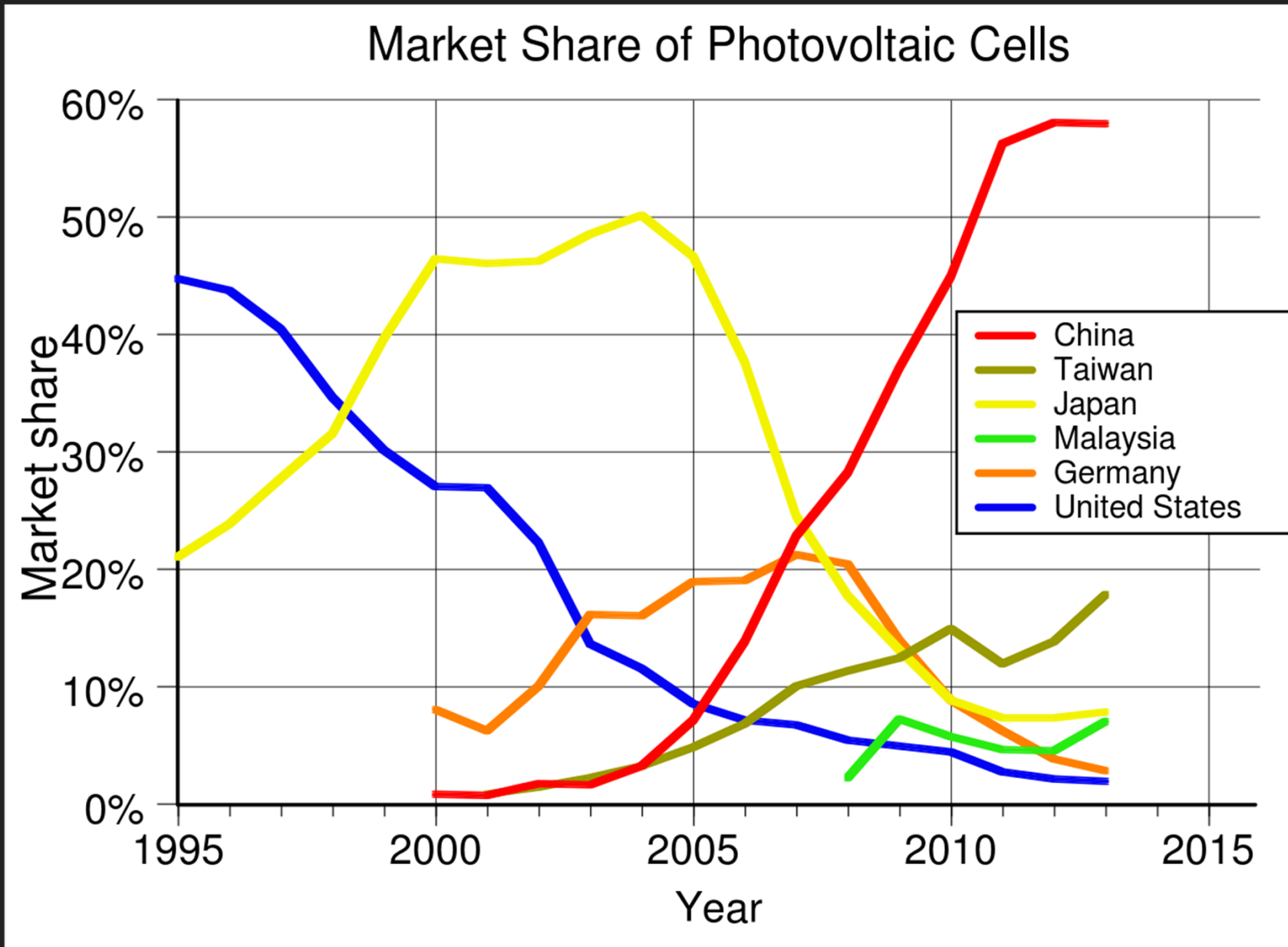
Successive revisions of projected installed capacities by IEA

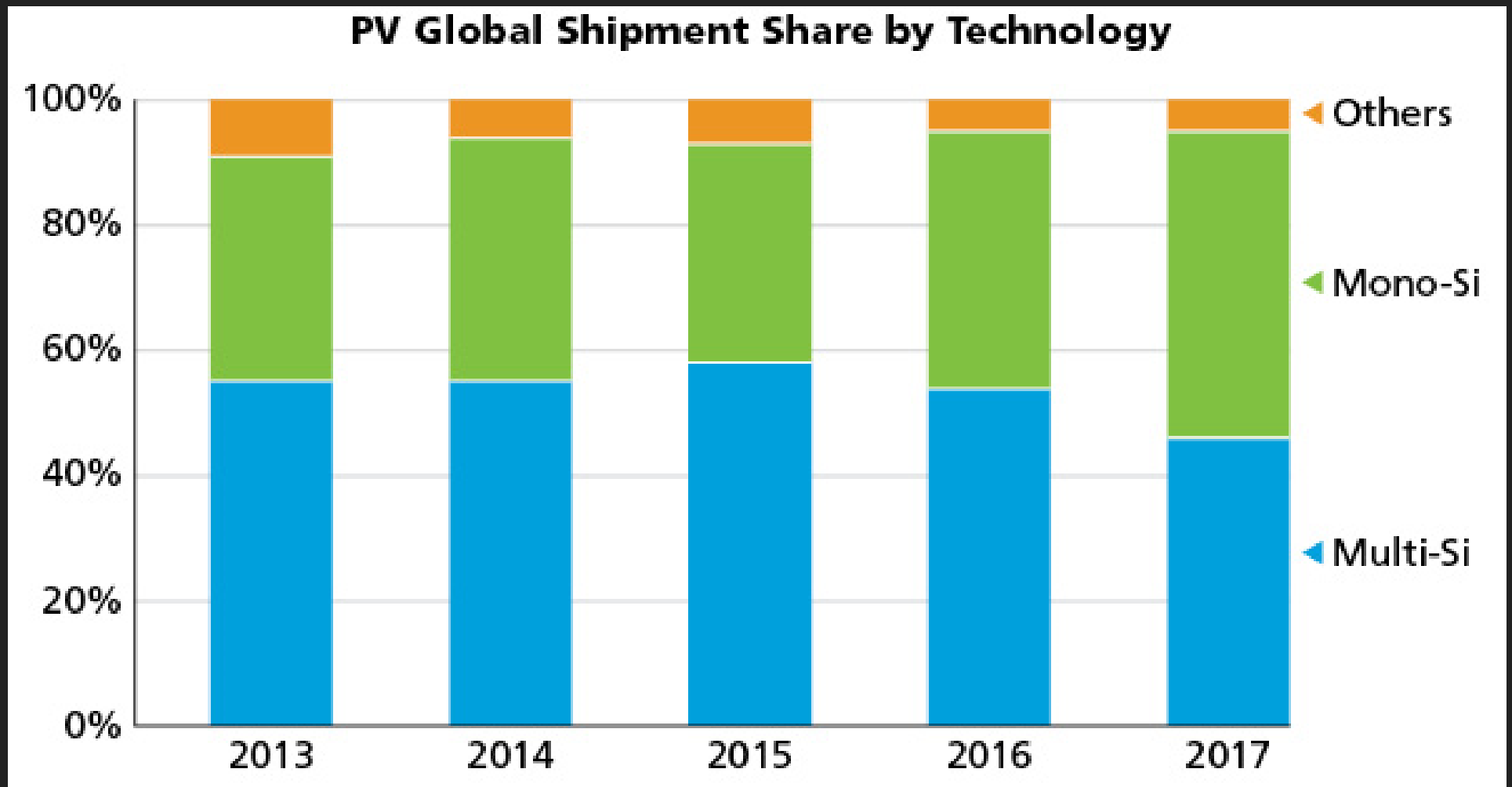
Global Revenue by Industry, 2015



Source: Navigant Research for Advanced Energy Economy

- ▶ 2018 1,6 T\$
- ▶ 4x-8x the speed of global growth
- ▶ IRENA estimates 100 trillion \$ investment until 2050
- ▶ New generation is 25% - 30% of the total investments
- ▶ Solar (CSP + PV) is estimated to grow the most





- ▶ 2012-2016 centralization and consolidation
- ▶ Multi GW/year scale facilities and companies
- ▶ Huge investments in technology of manufacturing
- ▶ Majority of innovations focuses on cell/module efficiency and improvement of conductivity
- ▶ Bankability, Guarantees, Capital tools, Long term stability, Logistics

- ▶ Niche markets (sensors, design, DIY)
- ▶ Developing tools for manufacturing (license, inks, printing and application technologies)
- ▶ Unleashing power of the community (open source, 3D print, blockchain)

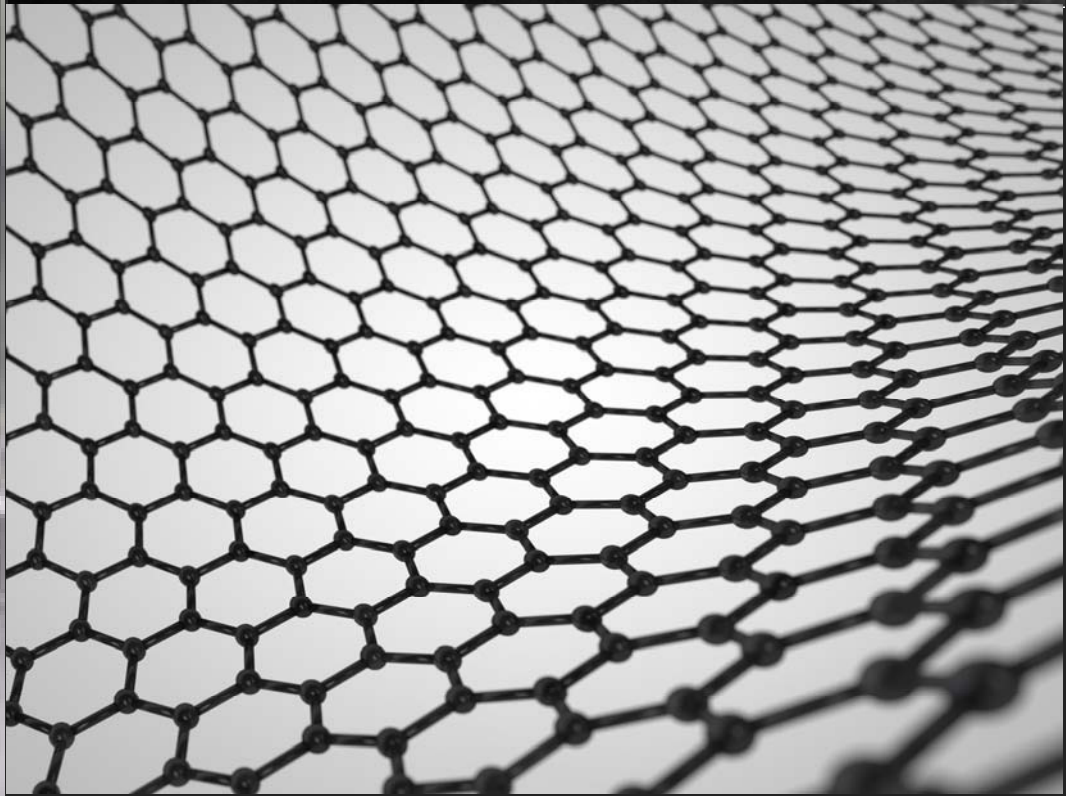
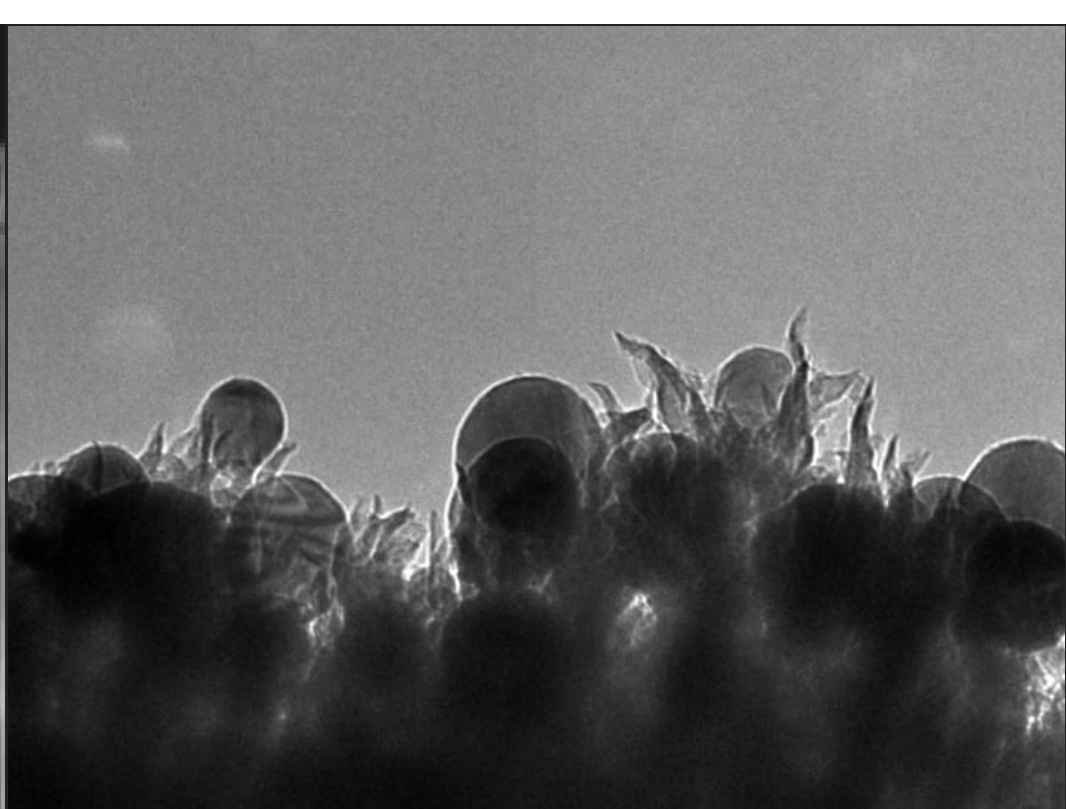
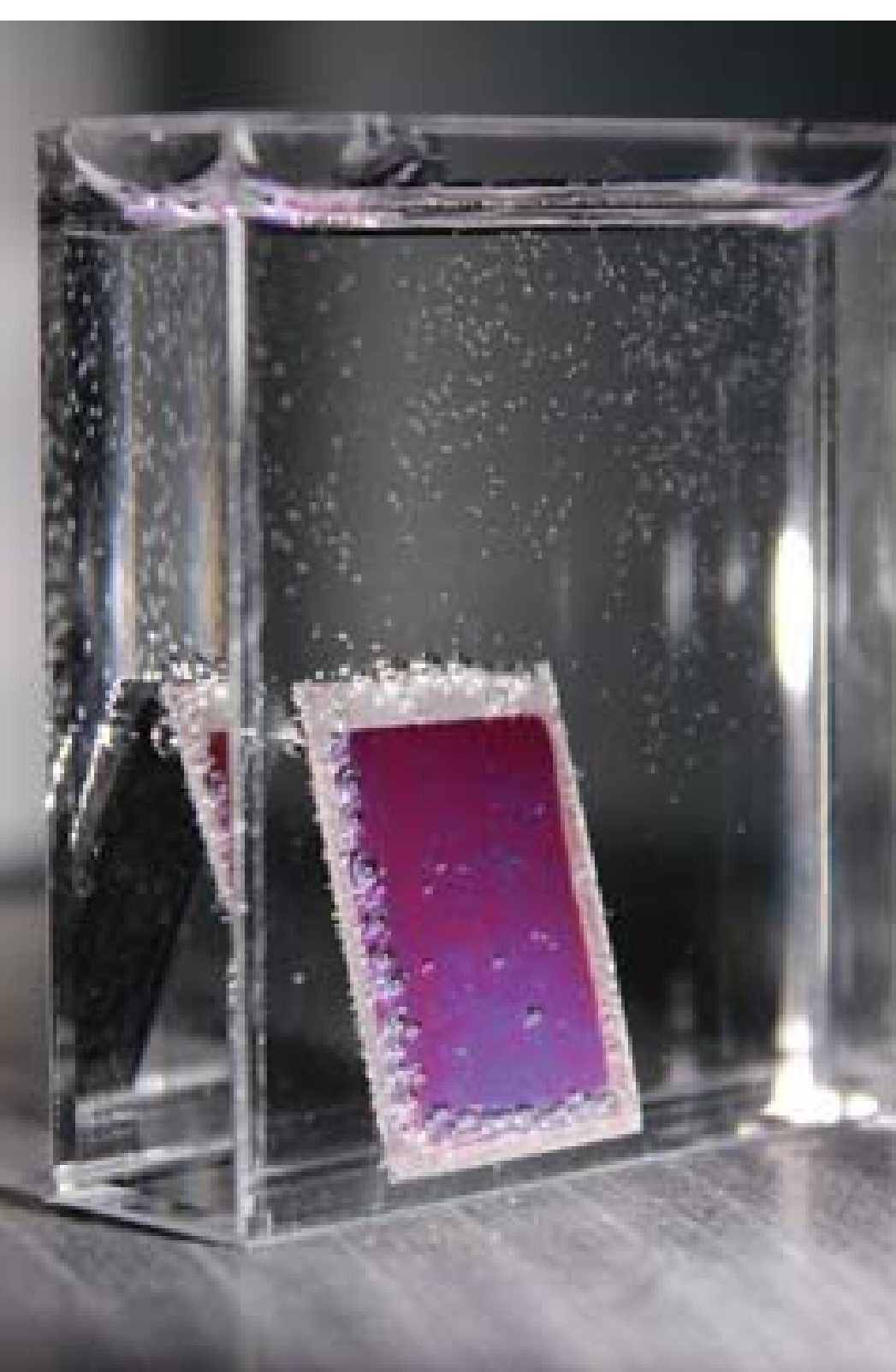
THE HISTORY OF
INNOVATION IS THE STORY
OF IDEAS THAT SEEMED
DUMB AT THE TIME.

Andy
Dunn

- ▶ 600m EUR/year payed for clean electricity that could have been produced (Germany only)
- ▶ Batteries will not solve seasonal intermittency
- ▶ Carbohydrates are stable, energy dense, and we have the infrastructure (storage, transport)

OTHER APPLICATIONS OPPORTUNITIES

- ▶ CO2 electrochemical reduction
- ▶ CO2 photochemical reduction
- ▶ Hydrogen manufacturing
- ▶ CO2 capture



Thank you for your attention

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