

# DOST R&D Program on Energy Storage

Hotel H2O Luneta, Manila 15 March 2016

Engr. Patrick E. Montero Senior Science Research Specialist DOST-PCIEERD

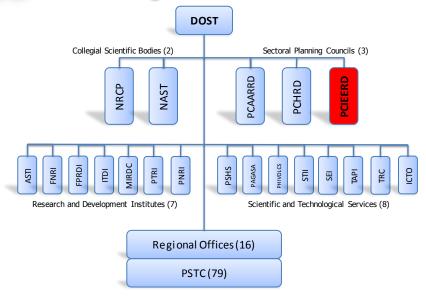


### **Outline**

- About DOST-PCIEERD
- R&D Initiatives on Energy Storage
  - Roadmap
  - Current R&D undertakings
- Reactions



# **DOST Organizational Structure**





### **PCIEERD Sectoral Concerns**

#### Energy, Utilities Systems Technology

- Renewable Energy (Solar, Micro hydro, Wind, Biofuels)
- Energy Efficiency
- Transportation (ITS, Mass Transport
   System, Automotive
   Parts, E-Vehicles)
- Disaster
   Management

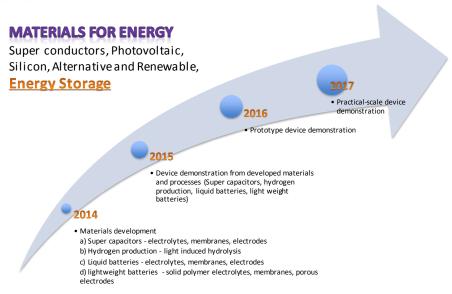
#### **Industrial Technology**

- Food (Phil. Ethnic, Food Processing Equipment Localization)
- Process (Textile, Food Biotech, High Value Products, VCO)
- Metals and Engineering (Tool and Die, M&E)
- Mining & Minerals (Innovation Cluster, Mining & Minerals)
- Environment (S&T Water)

#### **Emerging Technology**

- Materials Science (Nanotechnology, Construction)
- Electronics
   Semiconductor/ICT
- Biotechnology
- Genomics
- Photonics
- Space Technology Application

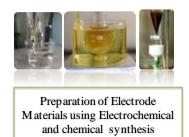


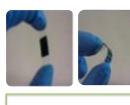




### **Current R&D Undertakings**

## FLEXIBLE NANOHYBRID SUPERCAPACITOR BASED ON CONDUCTING POLYMERS AND METAL OXIDES – UP Diliman







Flexible Supercapacitor device

Supercapacacitors in series connection using ePPy-MnO2 electrodes



### **Current R&D Undertakings**

#### **FABRICATION OF SUPERCAPACITORS USING INDIGENOUS TEXTILES AS ELECTRODE MATERIALS** – UST





(Eichhornia crassipes)





Banana (Musa acuminata)

PIÑA/Polyester Woven Fabric (PPWF)



### **Current R&D Undertakings**

FABRICATION OF A SOLID-STATE RECHARGEABLE LITHIUM-ION BATTERY USING LI,LA,ZR,O,, AS SOLID ELECTROLYTE FOR ENERGY STORAGE APPLICATIONS - UP Diliman









### Reactions

- Supply chain for outsourcing vanadium electrolytes and cell stacks
- Price competitiveness compared to other battery technologies
- Research opportunities to increase volumetric energy storage capacities
- Pilot demonstration of Vanadium RF battery



#### Dr. Carlos Primo C. David

Executive Director

Philippine Council for Industry, Energy and Emerging Technology Research and Development

Department of Science and Technology



Thank You.