

A new concept car for Fun and Health to drive !
as campus commuter, golf cart, land-water cruiser , etc.

Hideomi Koinuma
Niche, Tohoku University

Questions posed to cars

- 1, Can we live without car ?
- 2, What are main problems in currently used cars ?
- 3, Why is car prevailing in the world and what will be coming as a result ?

Answers to the above questions and possible solutions will be presented and discussed.

Fun and Health to drive !

New concept cars for campus commuter, golf cart, water frontier, etc.

Questions posed to cars

- 1, Can we live without car ?
- 2, What are main problems in currently used cars ?
- 3, Why is car prevailing in the world and what will be coming as a result ?

Answers and solutions:

- 1) Yes, but not easy
- 2) Energy and environment--> Fuel cell car or PHEV or else ?,
Safety for drivers and walkers--> Airbag, Autodrive --> Fun to drive ?
- 3) Free, convenient, status;
Driving is not healthy, Global warming,
Shortage of parts: Battery materials, Rare earth, Rare metals, Rubber

SSERC to make SSB dream come true by cooperation with Asia and Arab

- Not just equipment supply but promotion of science, technology, human resources

Research in SSERC:

Production of pure silica and SOG-Si

Realization of solar breeder concept

Utilization of solar PV power

Feasibility study on long distance dc transmission by HTSC cable

Education and training of graduate students and young engineers

- Initial sites : USTO, Saida Univ. CDER Adrar)



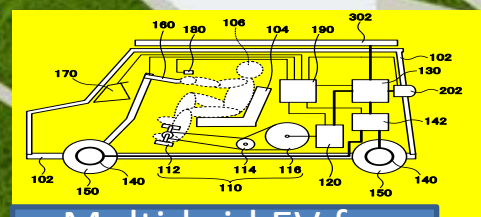
Vist USTO, (2009.5)





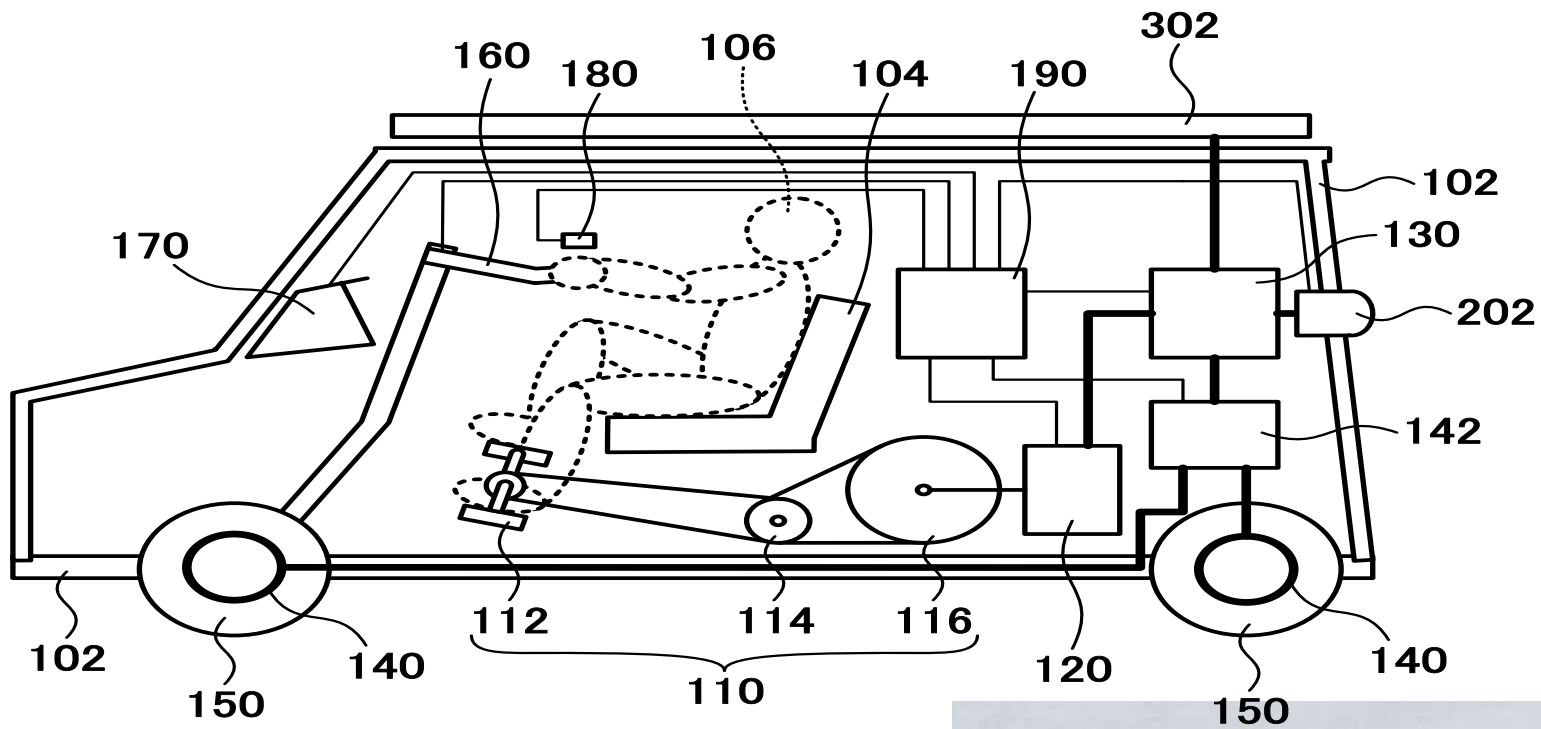
PV panels & system

Learning Commons
(1F)
& Engineering
Commons (2F)
in the center



Multi-brid EV for
campus commuter

The Complex of Turkmenistan Academy of Sciences
Technology Center (Completed in June, 2014)
The University of Engineering and Technology of Turkmenistan
(Designed by the cooperation of AST, JTSTC, and FAIS. To open in 2017)



300

Cf. Yamaha cart used in Oil & Gas Univ. in Ashgabat

Athletic machine
Takei kiki Co. Ltd.

Multi-brid cart for golfers with 4 men's power and rooftop PV
H,K, et al., JP Patent Application



Multi-brid car (MBC)

**** *New concept car equipped with health care and athletic gym function.** ****

Why ? EV has a serious weak point for deployment in cold local areas, if the air-conditioning, especially heating, is driven by the battery.

What is MBC ? Man power is not so big (100~600 W), but it can help not only battery charging but also warm up his body from inside.

How, who, where, and when ? Install bicycle-type electric power generator at driver's and passengers' seats. People can work and relax as they like under monitoring their health care sensors.

Thus, automobile can be an athletic room, in addition to transportation tool.



Fig. 1 Bicycle type human power electric generator : 200 ~600 W

Prof. Hatta @ Kochi Inst. Tech

Flexible solar cell: PV on plastic film (PI, Pen, etc. or metal foil)



Land-Water front leisure EV



Youtube: SSB-“Super Apollo program”

Proposed originally to SCJ in 2007 as an innovation 25 project, forwarded to G8+5 Academies’ meeting in Rome, 2009, and initiated as SATREPS –SSERC project in 2010



YouTubessbPreview_EN.wmv

- Why Si-PV from desert sands ?
- Compare with satellite PV and nuclear power
- Youtube in Japanese and English
- IE³ Journal: Spectrum, Superconductor News

“Global Apollo program”

proposed from UK in 2015

- [Global Apollo Programme](#)
- **U.K. researchers propose \$15 billion for clean energy**
- <http://news.sciencemag.org/funding/2015/06/u-k-researchers-propose-15-billion-clean-energy>
- A group of high-profile scientists, economists, and business leaders has called on world governments to launch an Apollo space program–style effort to limit climate change to no more than a 2° C rise in temperature above preindustrial levels through **more research into carbon-free energy production**. Governments that sign on to the proposed Global Apollo Programme, [described in a report](#) released today, would commit to spend at least **0.02% of gross domestic product on energy research** so that renewable technologies—principally wind and solar—become cheaper than coal in 10 years.
- The report was authored by **six members of the U.K. House of Lords**, including Astronomer Royal Martin Rees and economist Nicholas Stern, as well as **David King**, a former U.K. government chief scientific adviser. The effort will require an international commission to avoid duplication of effort and identify bottlenecks in development, the authors note. King told BBC he [expects the project to launch in November](#).
- **0603: Global Apollo programme seeks to make clean energy cheaper than coal**
- <http://www.theguardian.com/environment/2015/jun/02/apollo-programme-for-clean-energy-needed-to-tackle-climate-change>

Stem technology initiative

- What happens if the sun stop shinning ?
- What happens when living matters stop their life ?
- Can life be defined only for organic matters ?
- Is exergy concept useful for evaluating and designing the new energy and environment world ?

**SSB is our proposal for answering these questions
so we could pass the baton to the next generations**

Energy

Si-photovoltaic

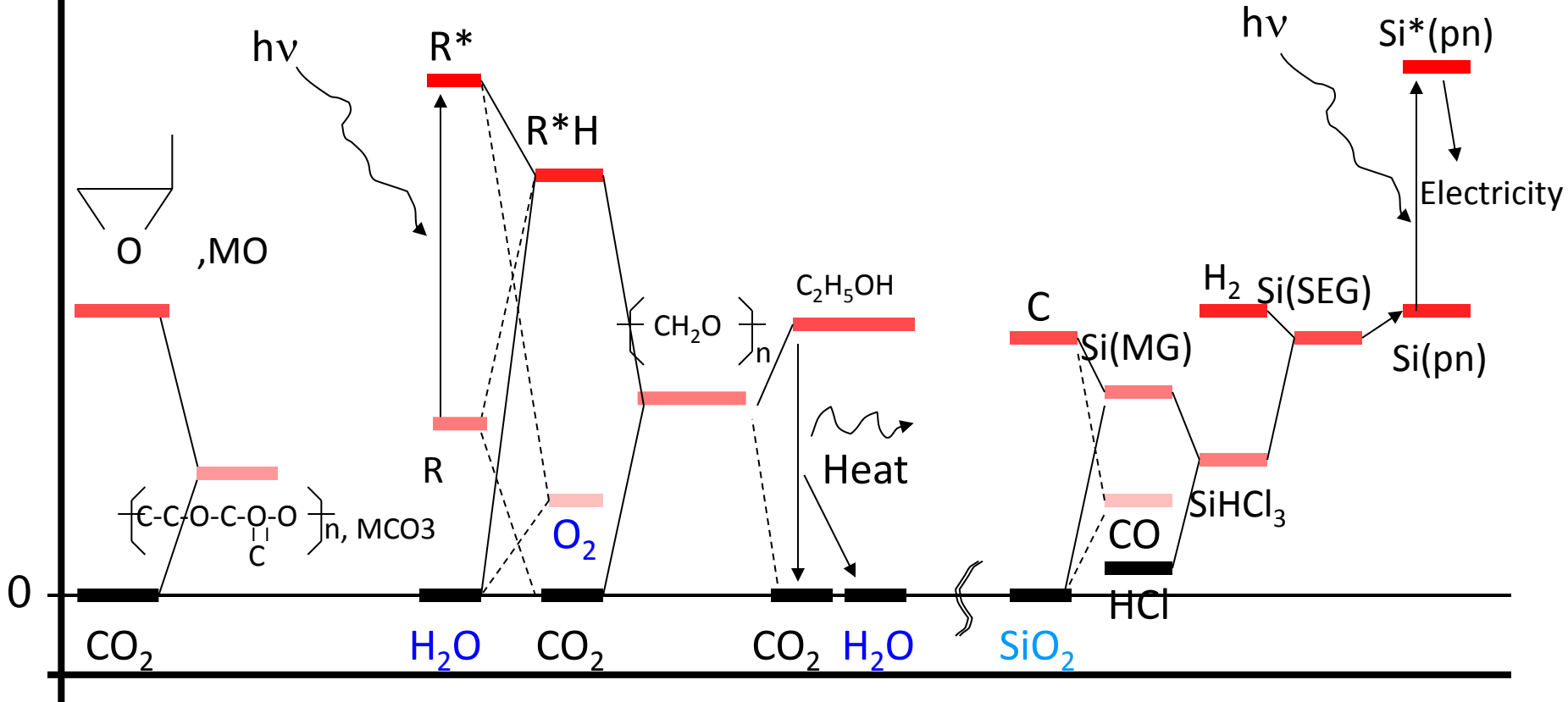
PV has an energy conversion efficiency 10 times higher than photosynthesis

CO₂ fixation

Biomass

<CO₂ polymer>
<CCS>

<Photosynthesis in nature>
<Photo catalysis>



Life cycle of materials driven by solar energy

Global energy problem: It's a matter of zero-exergy oxides

(H. Koinuma, IAC-WS061216)