



Optical Wireless Power Transmission (OWPT)

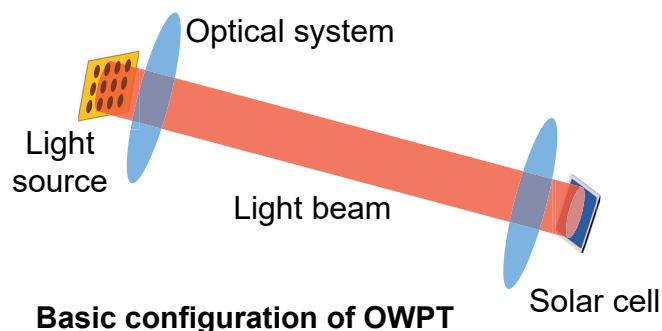
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<http://vcSEL-www.pi.titech.ac.jp>

- Development of applications of OWPT
- Construction and verification of OWPT systems
- Indoor, mobility, under water, etc. application
- Development of photonic devices and modules

Innovation by a true wireless society based on OWPT!

Following to the wireless communication, we expect wireless power transmission for next society. Optical wireless power transmission (OWPT) is promising from the features of small size, long distance, no electromagnetic wave interference. Toward the application development of OWPT and its implementation to society, we are researching on the systems and device.

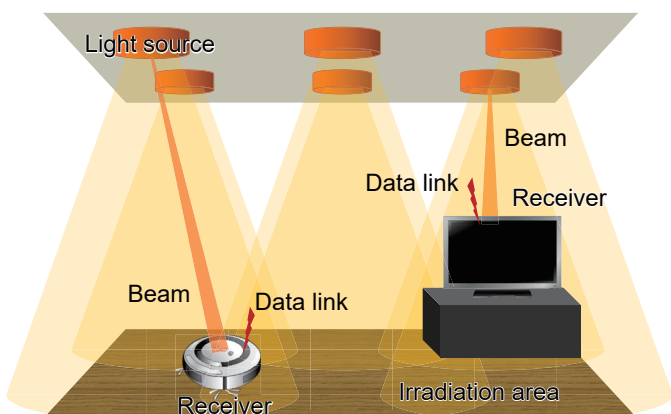


Basic configuration of OWPT

• Main modules are highly efficient light source, solar cell, and optical systems for beam control.

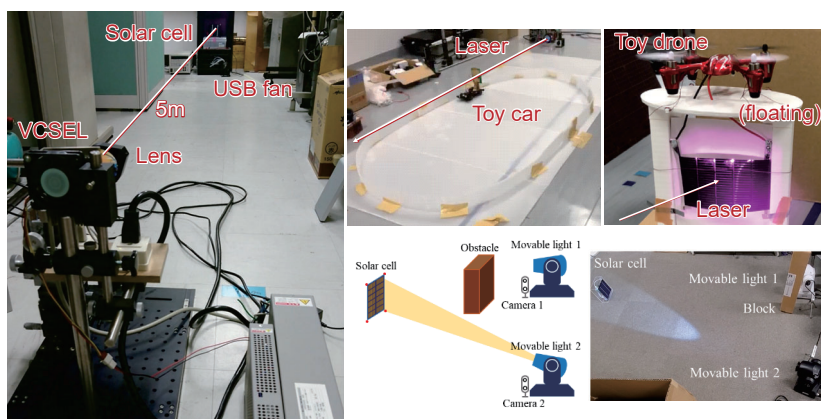
- **Simple system:** Light source, solar cell
- **Small size:** Laser/LED, solar cell
- **Long distance:** Beam transmission

- **High output:** up to kW-class (future)
- **Simple circuit:** DC circuit and no EMI
- **Note:** laser safety and low efficiency



Schematic view of indoor OWPT system

- The goal is to apply not only to information equipment but also to all electric appliances and electric mobilities.
- Expanding of usage situations such as power supply to fixed equipment, power supply while moving.
- Advantages in system performance/function improvement, use in anytime and anywhere, etc.



OWPT prototypes using VCSEL and LED

- Output power of 10 W to a distance of 5 m-class by a high power VCSEL array (> 20 W). Power supply efficiency can be up to 16% and solar cell efficiency is over 35%.
- At the moment, we are verifying power supply for toy cars and drones. Multiple light sources for high functionality OWPT are under investigation.