

# NPL Scientists Produced Electricity from Water Without Using Energy (Download PDF)

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Scientists of NPL have developed a new way producing electricity from water hydroelectric cell at room temperature. This was innovated by team of scientists of NPL led by Dr. RK Kotnala from Delhi's National Physical Laboratory (NPL).

 National Physical Laboratory

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## How Does It Work?

- Electrodes of silver and zinc make the cell and that produces electricity.
- Nano porous magnesium ferrite divides water into
  - Hydronium ( $H_3O$ ) ions
  - Hydroxide ( $OH$ ) ions
- Magnesium has high affinity for hydroxide and splits water into hydroxide and hydronium ions.
- $H_3O$  ions get inside the nanopores of magnesium ferrite and generate an electric field further separating the water.
- To improve the activity of magnesium ferrite about 20% of magnesium is replaced with lithium.
- At magnesium, site substitution of lithium raises the sensitivity of magnesium ferrite.
- Ions travel inside the medium to produce electricity.

## Importance

- Hydroelectric cell using magnesium ferrite is only 1 sq. inch in size.
- It produces 8 mA current and 0.98 volt.
- Voltage increases to 3.70 volts when 4 such cells of 2-inch diameter are connected in series operating a small plastic fan or an LED light of 1 watt.
- This new method does not use any power or chemicals.

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