

# Food Battery Competition (New for 2011)

## **Sponsored by:**

The University of Tennessee, Materials Research Society (MRS), Student Chapter.

## **Introduction:**

We all dream of the electric cars replacing the combustion engines. This will reduce our carbon footprint on our only planet that does not have enough natural resources to support our growing populations and energy needs forever. Batteries have evolved a great deal and when you compare the bulky, heavy, toxic car lead batteries to the novel and outstanding lithium-ion batteries, you can recognize the progress. Lithium provides good voltages and power in light weight and small sizes. Just look at how much the weight of a laptop has changed in the last ten years. Rechargeable NiCad and NiMH batteries have been replaced by lithium, and you can tell by how much lighter a new portable computer is and by how long these new batteries last between charges. Now, we have to get excited about battery technology and have the young minds of America and Tennessee find even better solutions so that we can make emissions-free transportation possible with small, light and high power delivery batteries available to us. This competition serves as a reminder of pressing technological needs that require students to start by getting involved early in seeking feasible solutions that will cause no further harm to our environment.

## **Rules:**

Do-it-yourself battery (or cell) made up with an electrolyte (solid or liquid) from foods only (anything drinkable or edible). Examples are: milk, sugar, juice, salt, potatoes, tomatoes, extracts, mixtures, etc). No detergents, cleaners, or artificial chemicals allowed. The electrodes can be any material (nails, coins, metal, alloy, composite, etc) and shape. These need to be within a light-weight container with the electrodes accessible for probing. Remember, the container is part of the total weight!!! The experiment needs to be setup at UT for Engineer's Day in front of the judges, then alligator clips will be connected to the electrodes to register the voltage and the current. The weight of the cell will also be recorded. The winning team will be determined by dividing the power ( $v \times i$ ) over the weight. The highest value calculated wins first place and receives a trophy. The participating teams need to submit an ingredients list, and before the competition begins all members need to sign the list (honor code) confirming all ingredients used are natural. MRS will setup a booth, scoreboard and a table with a multimeter and scale in SERF's lobby on the day of the events.

## **Message:**

Be creative. Try different things. Always be safe. Only natural stuff. Search the web. Learn. Have fun.

## **Contact Information:**

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