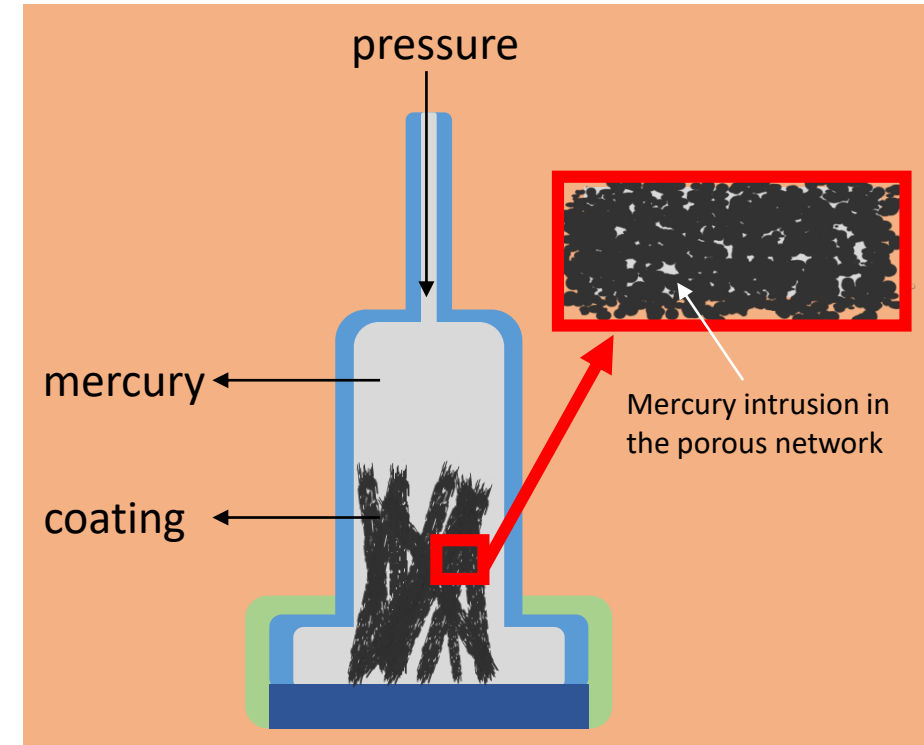


# T33 Mercury porosimetry - CERTH

## How it works

Mercury porosimetry is based on the capillary law governing liquid penetration into small pores. Mercury is chosen as the intrusion liquid since it does not wet nor react with most materials. The volume of mercury ( $V$ ) penetrating the pores of a separator or an electrode's coating (placed inside a penetrometer) is measured directly as a function of the applied pressure. This P-V information provides a unique, accurate and reproducible characterization of the porous network of an electrode's coating.





## T33 Mercury porosimetry - CERTH

### What can be seen

Mercury porosimetry can measure pores in the range of 5nm up to 350 $\mu$ m and obtain pore size distributions and critical porous parameter values such as total pore volume/area, tortuosity, fractal dimension and coating bulk/apparent density.

**What kind of sample ?** Mercury porosimetry @ CERTH can characterise powder and solid samples with a total volume <15ml.

**Why is it useful ?** Since porosity defines the mechanical behavior, overheat shutdown performance of a separator and the balance between the ionic and electric transport of the electrodes, mercury porosimetry is a valuable method for production control, performance and safety assurance.

**Maturity level :** advanced - a lot of experience has been gained by characterizing a plethora of separators (PP/PE) and electrodes (anodes/cathodes, single/double-coated, pristine/cycled, calendered/uncalendered). CERTH has developed a specialized measurement protocol for coatings attached to current collectors.

**Investigation time-scale :** days

