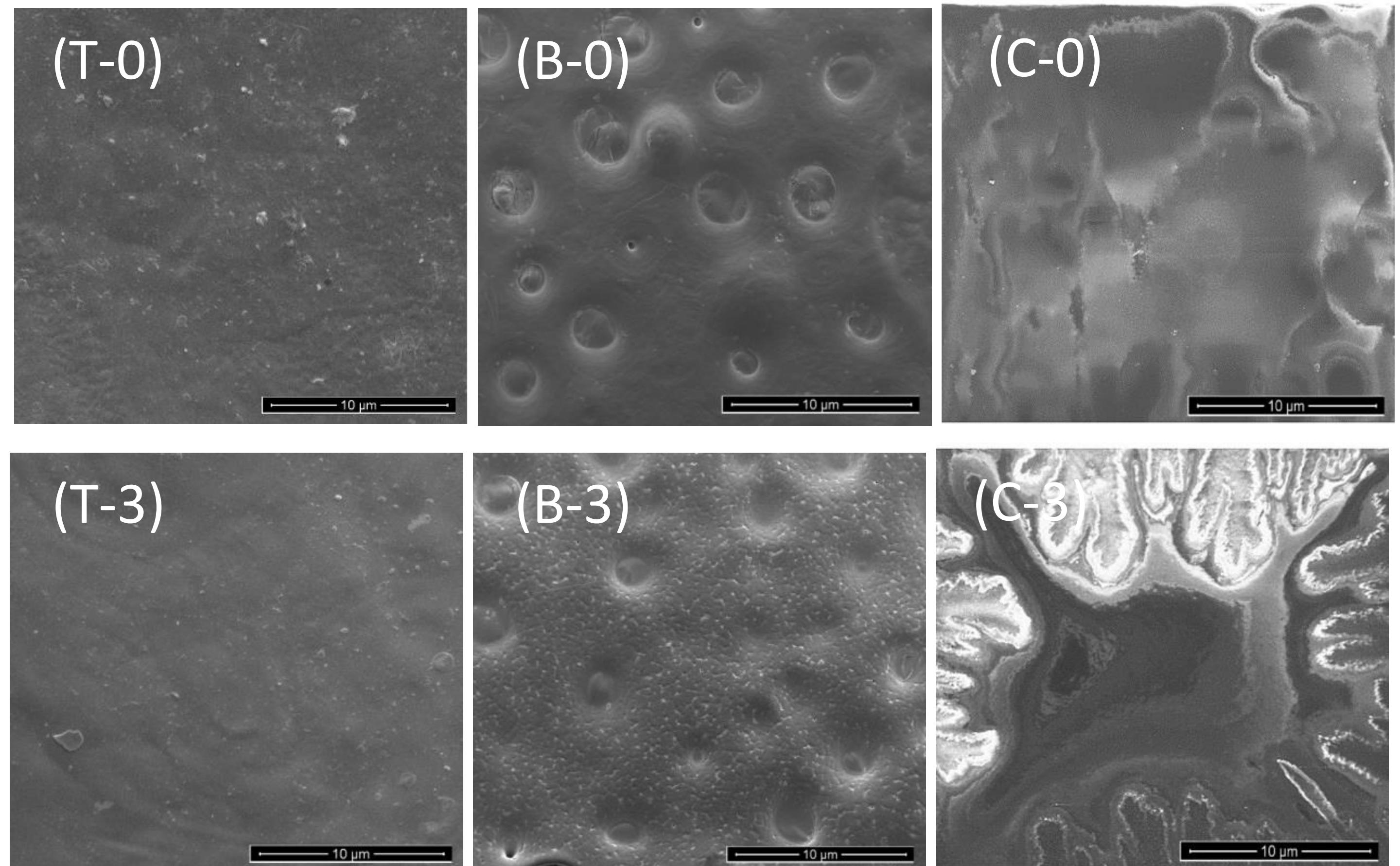
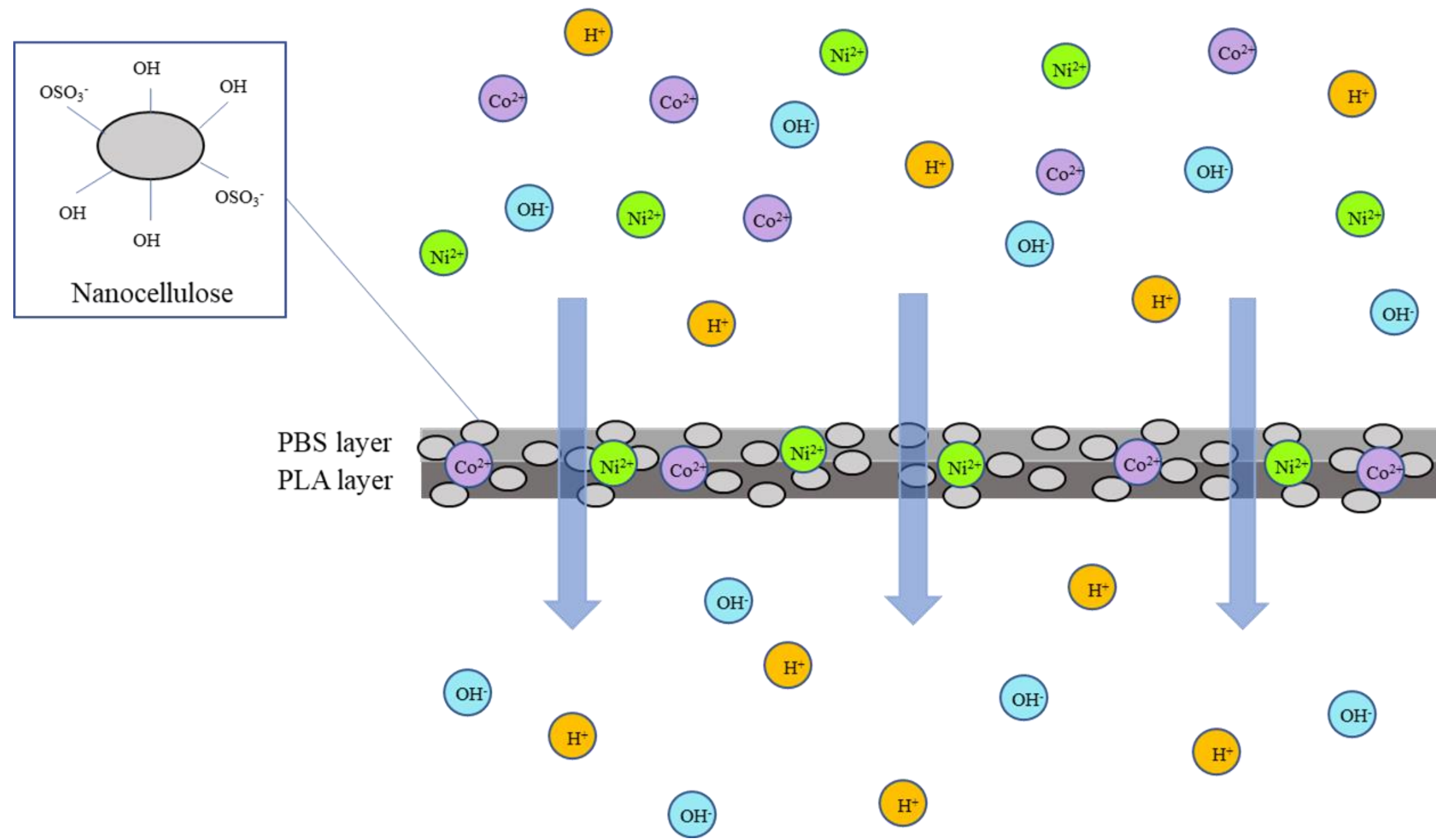




# Withstandable Nanocellulose Dual Layer Polymeric Membrane for Metal Ions Treatment for Fabrication

PI2019004898



Top view (T), Bottom view (B), Cross-section view (C).

## BRIEF TECHNOLOGY

The invention relates to the preparation and use of dual layer membrane containing nanocellulose material for separation of metal ions from aqueous solution

## CURRENT ISSUES

Unlike the cellulose powder product, the invented nanocellulose filled dual layer membrane can work at high pressure and high temperature for removing metal ions via adsorption process.

Possess great porosity and small pore size for adsorbing/excluding metal ions in wastewater;

- Have great mechanical strength to be applied in membrane reactor with high pressure;
- Good thermal stability to tolerate high temperature of metal ions wastewater generated by industries

## INVENTIVENESS & NOVELTY

- Nanocellulose filled PLA/PBS dual layer membrane for metal ions removal via adsorption
- Water-vapor induced phase separation; freezing for crystallization

## USEFULNESS & APPLICATION

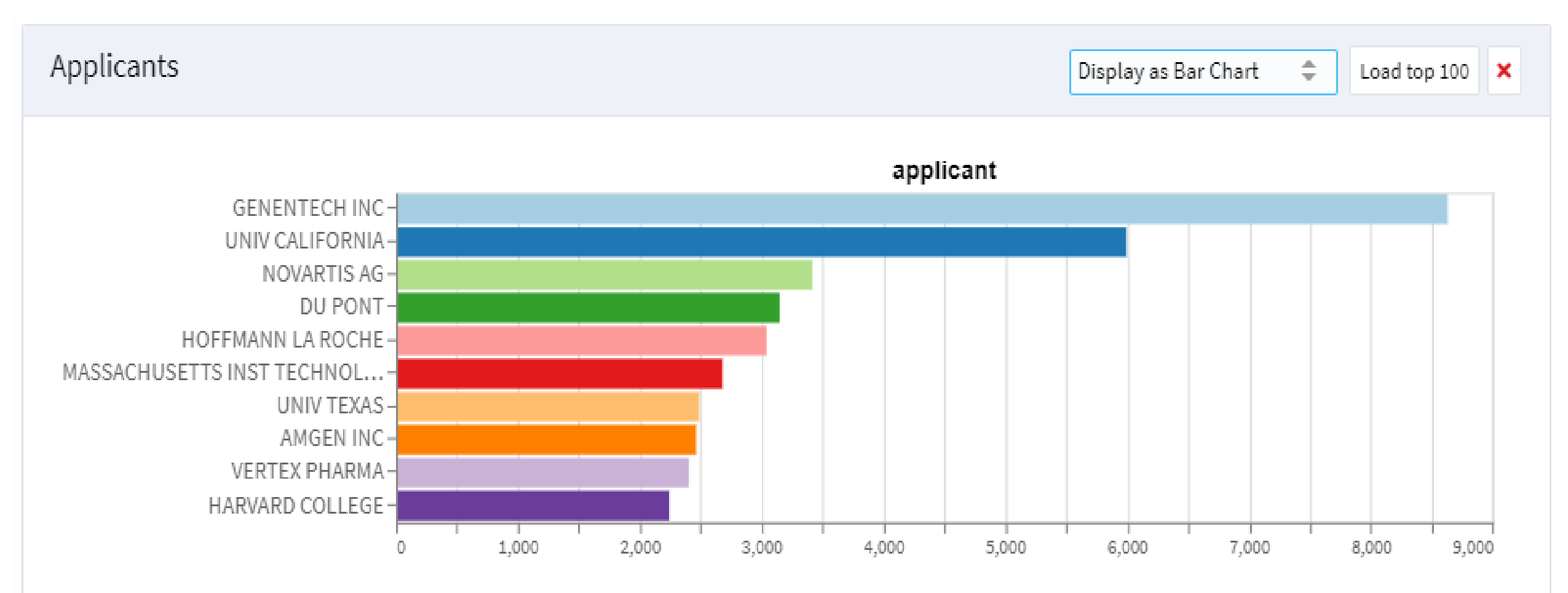
- Since the membrane is excellent in removing low concentrated metal ions, it can be applied by integrating with unit operations such as activated carbon adsorption column, wet-process precipitation and other filtrations to optimize the wastewater purification performance

## IMPACT OF THE PRODUCT

- The membrane operation can be an alternative replacement to the high cost of ion exchange operation.
- The high regeneration of this membrane makes it possible to be reused by industry in order to reduce their overall cost.

## MARKET POTENTIAL

- Textile, electronic, automobile, aircraft and mining industries



TRL : 7-Demonstration of prototype



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