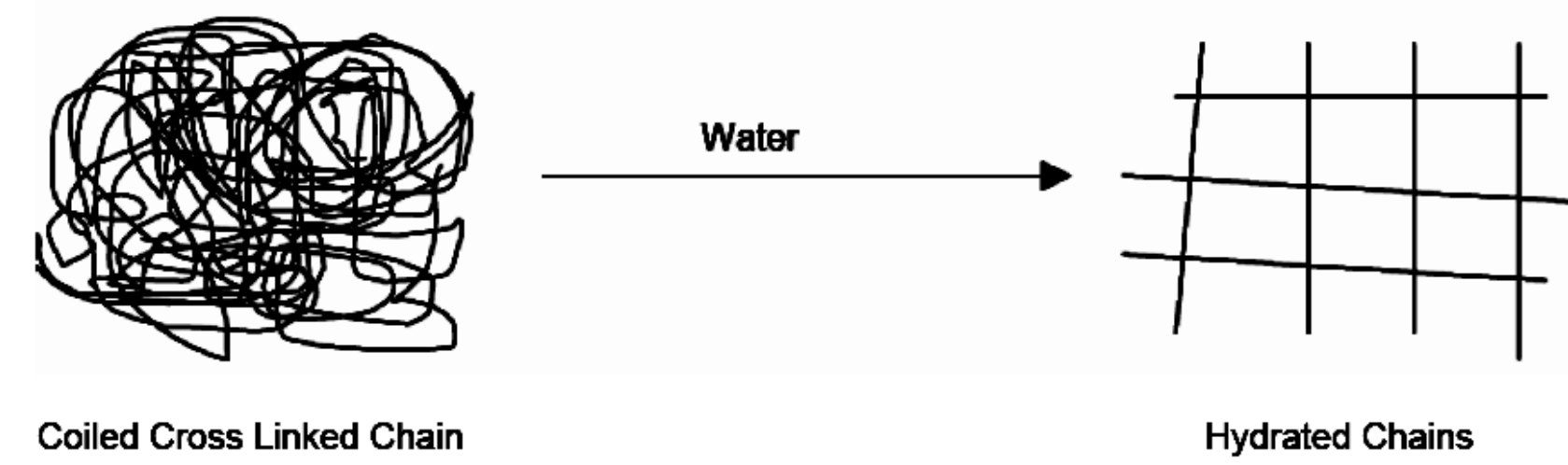


Polymer Information



Super absorbent polymers (SAPs) are cross-linked polyelectrolyte materials that hold at least 100 times their weight of water.

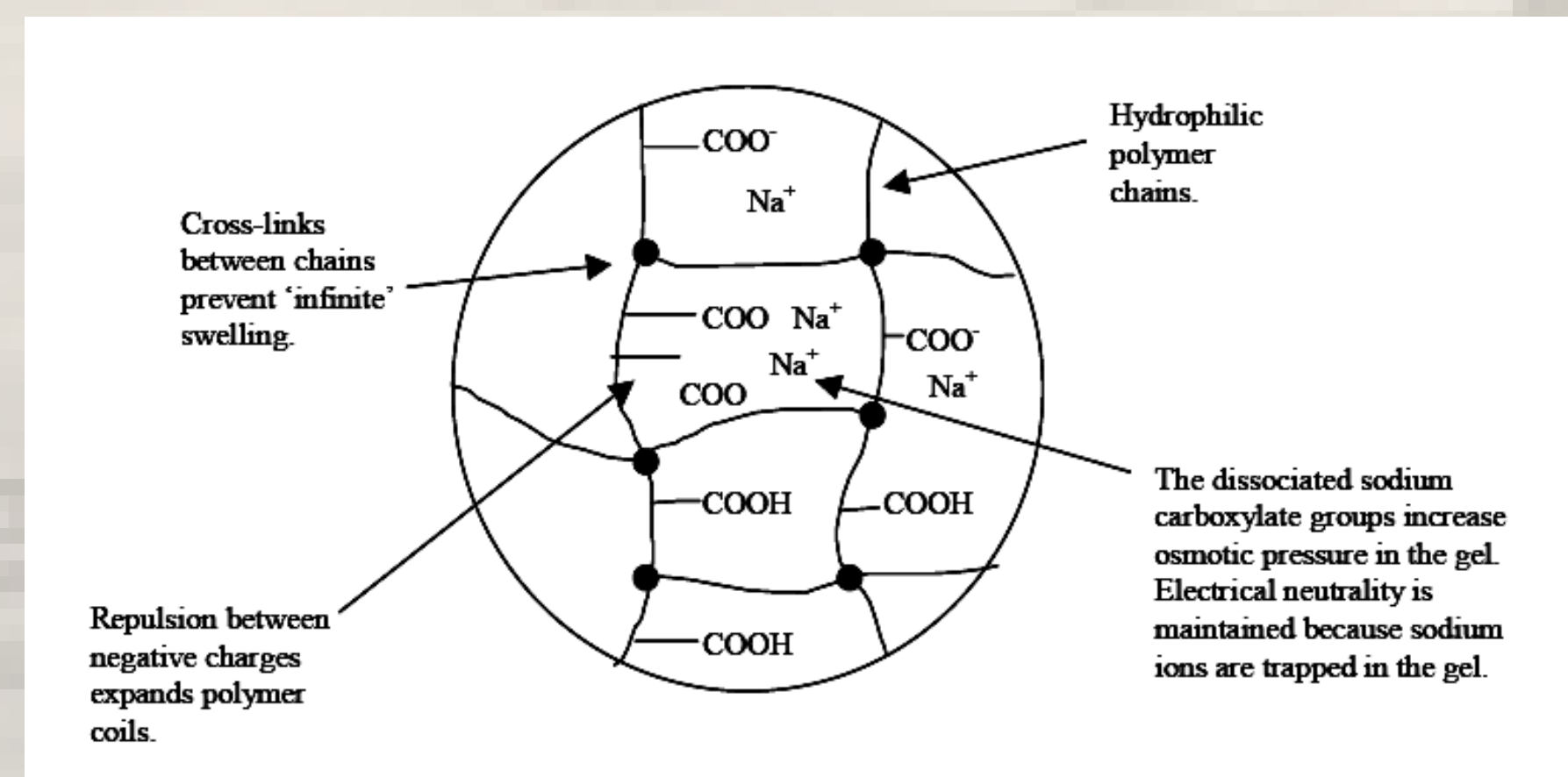
When polymers absorb water they swell.



Polymer is basically a bundled net that stretches out when the polymer swells.

When polymers swell they form a hydrogel.

The cross-linked net holds the water and stops the polymer from dissolving and continuing to swell beyond capacity.



Hydrogels hold on to water until they are acted upon to deswell.

Hydrogels can deswell using both heat and electricity.

The electric method of deswelling is more effective in this IPRO because it can be more easily controlled in outside applications.

IPRO 312

Active Porous Pavement System for Storm Water Management

Team Concerns and Organization



Storm water and waste water are combined into a combined sewage system

During storms when the combined sewage greatly exceeds the capacity of water reclamation plants excess is released into lakes or rivers without treatment

Combined sewer overflow being released into Lake Michigan from the Milwaukee Harbor

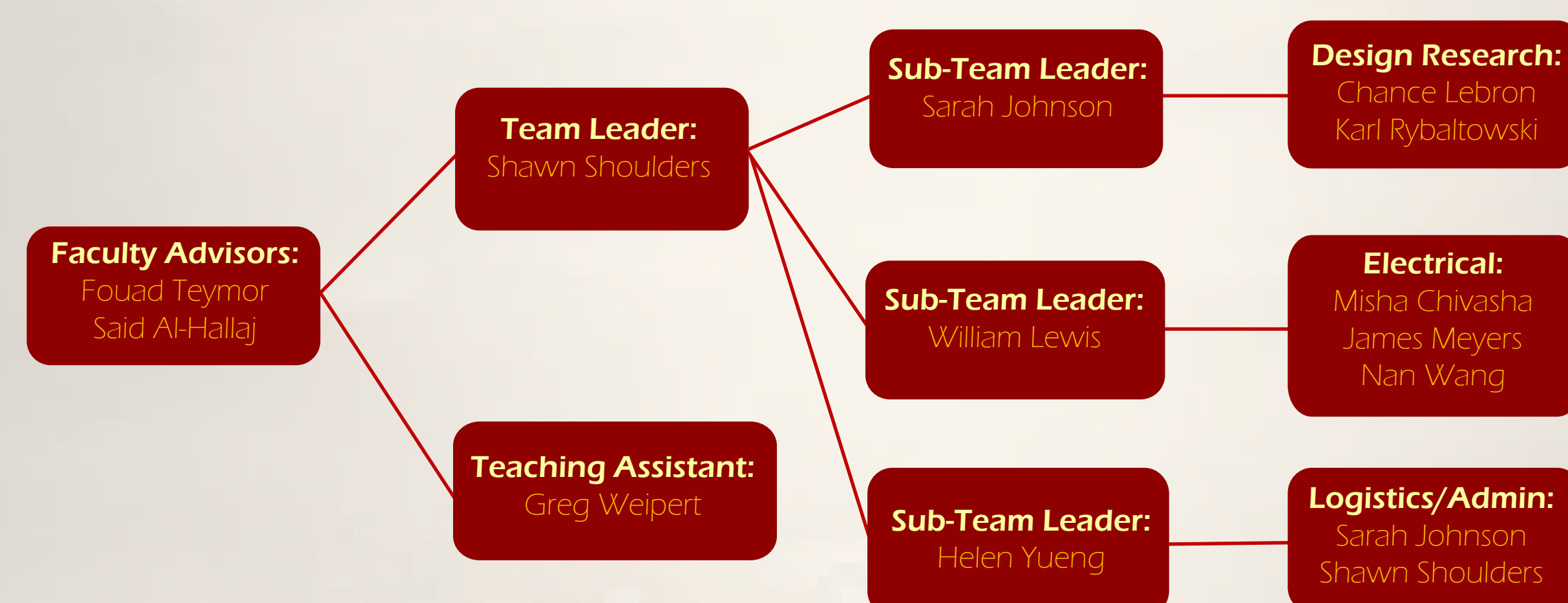


When the combined sewer overflows the water can come back out of inlets and drains causing flooding.

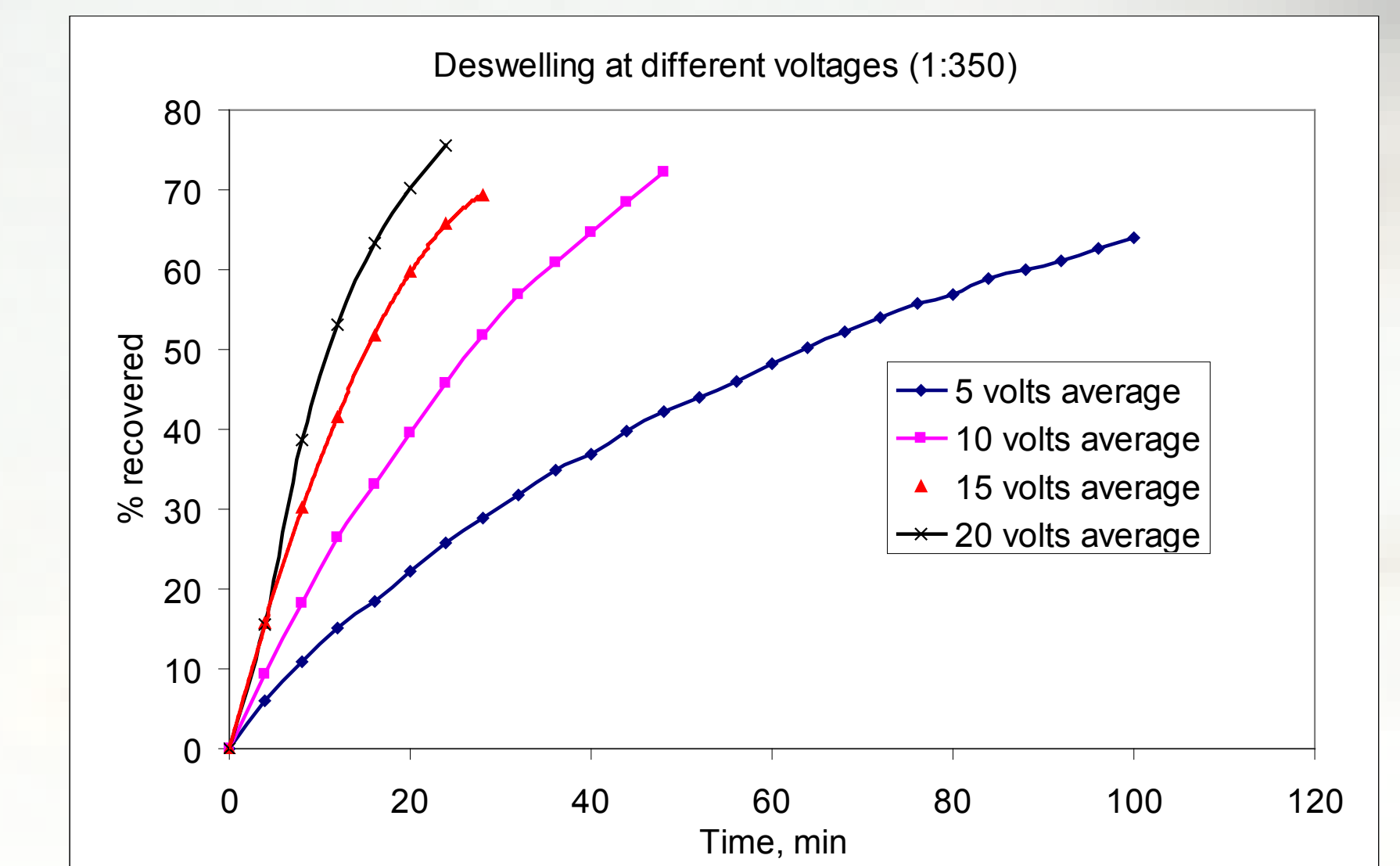
Flooding in the Chicago area after storm events.



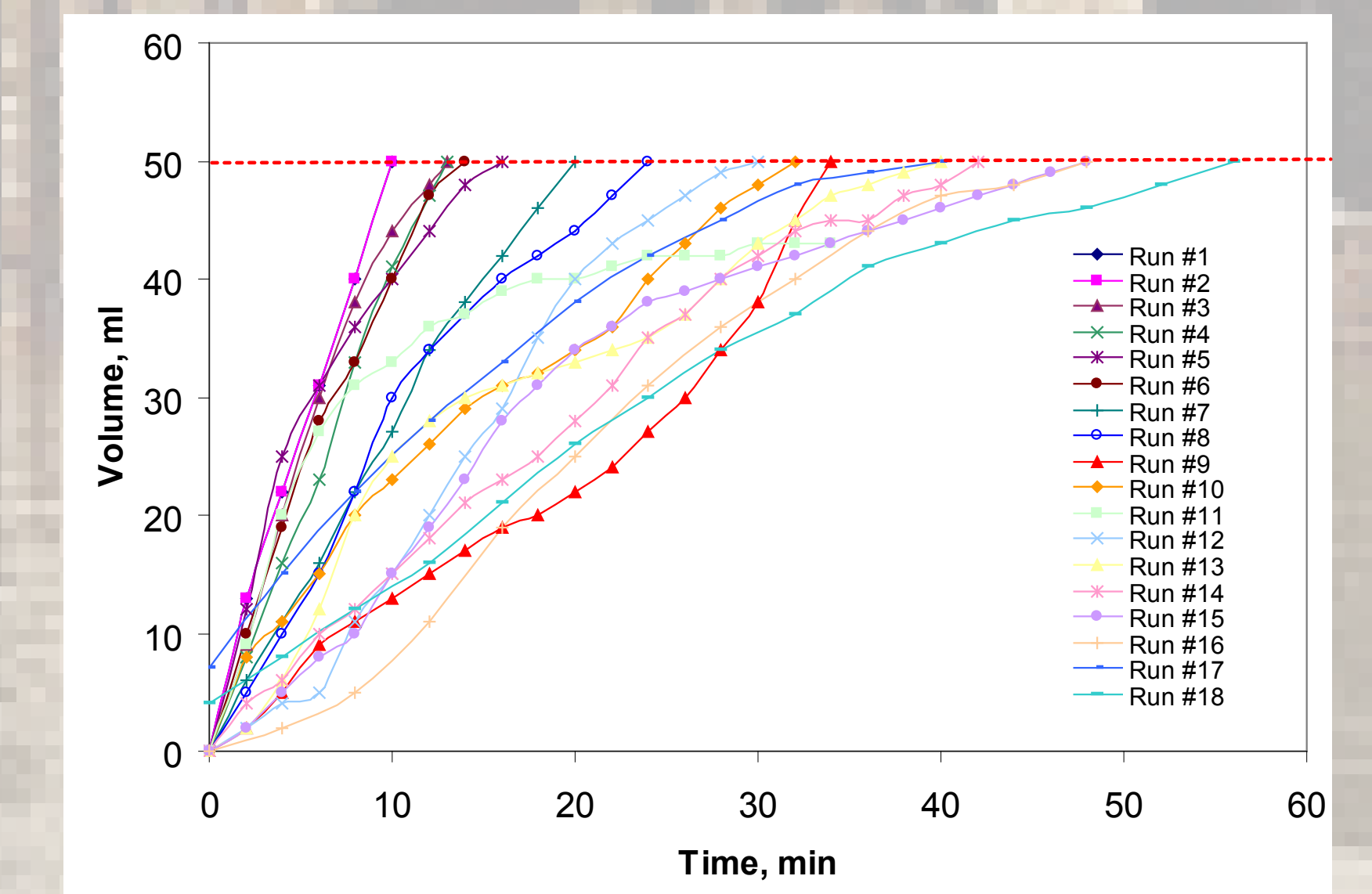
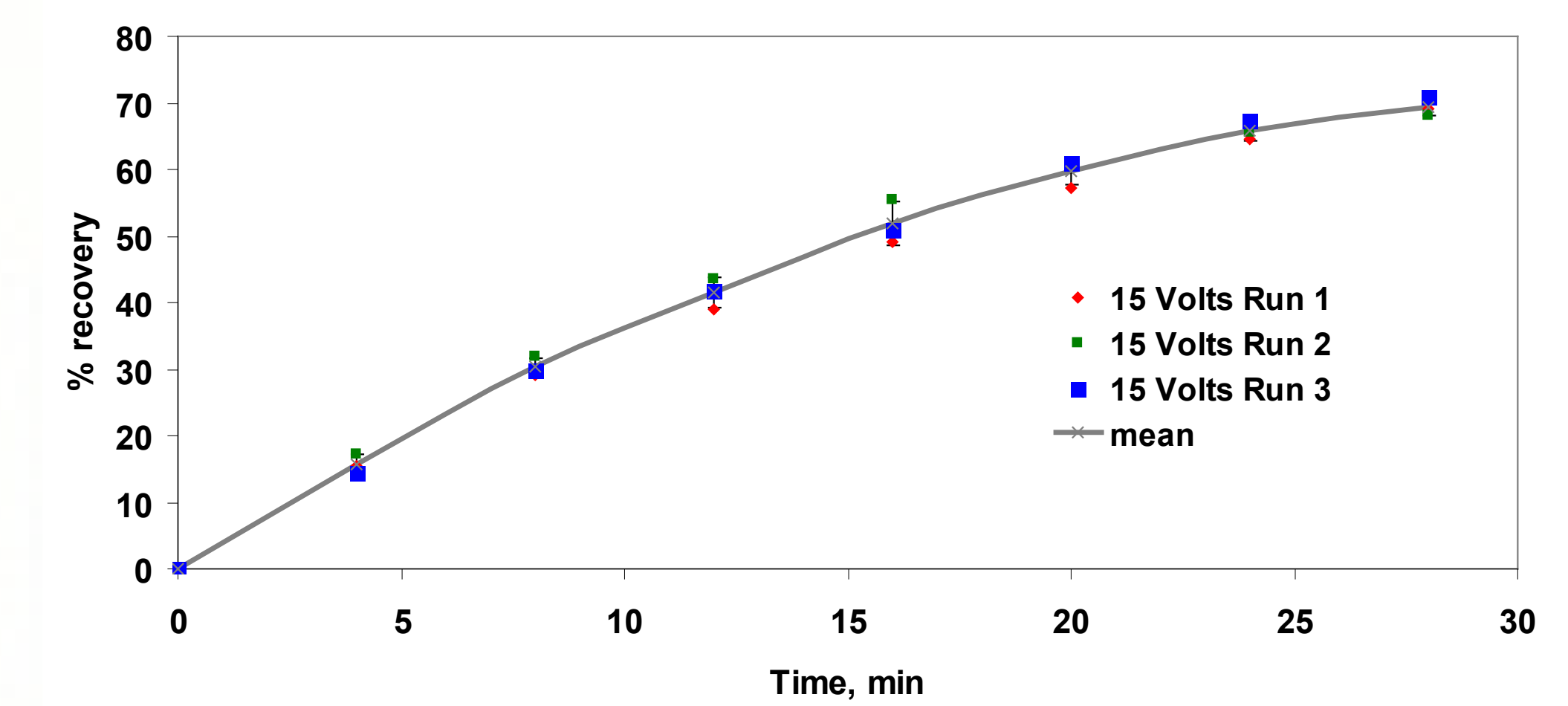
Team Organization



Deswelling the Hydrogel

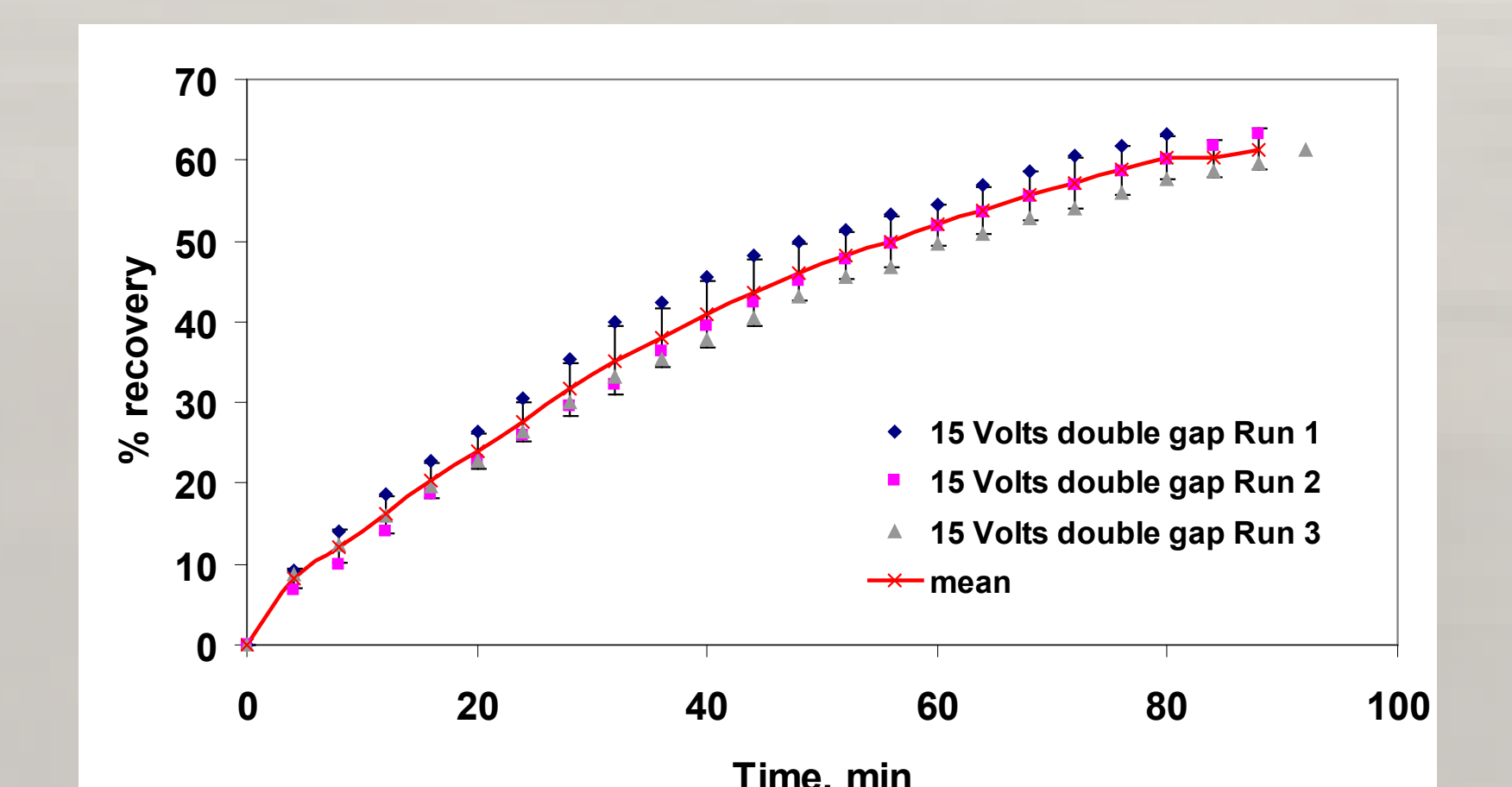


The time it takes for the hydrogel to deswell is dependant on the amount of voltage applied to it



The polymer slowly deteriorates over multiple swelling and deswelling cycles.

The polymer lasts around 18 cycles before it completely deteriorates.



When the space between the electrodes is doubled the time it takes to deswell almost triples.