

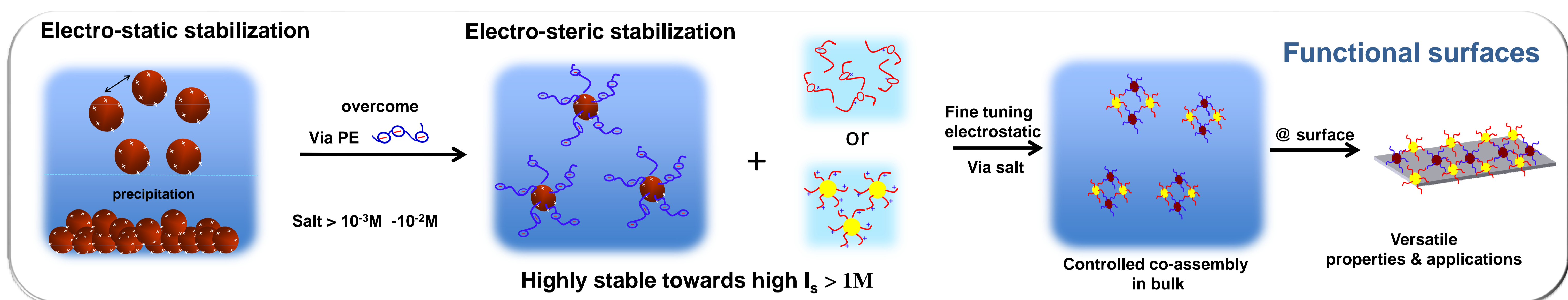
SUGHAR-SURFACE GROWN HYBRID FUNCTIONAL LAYERS

P³N-2009

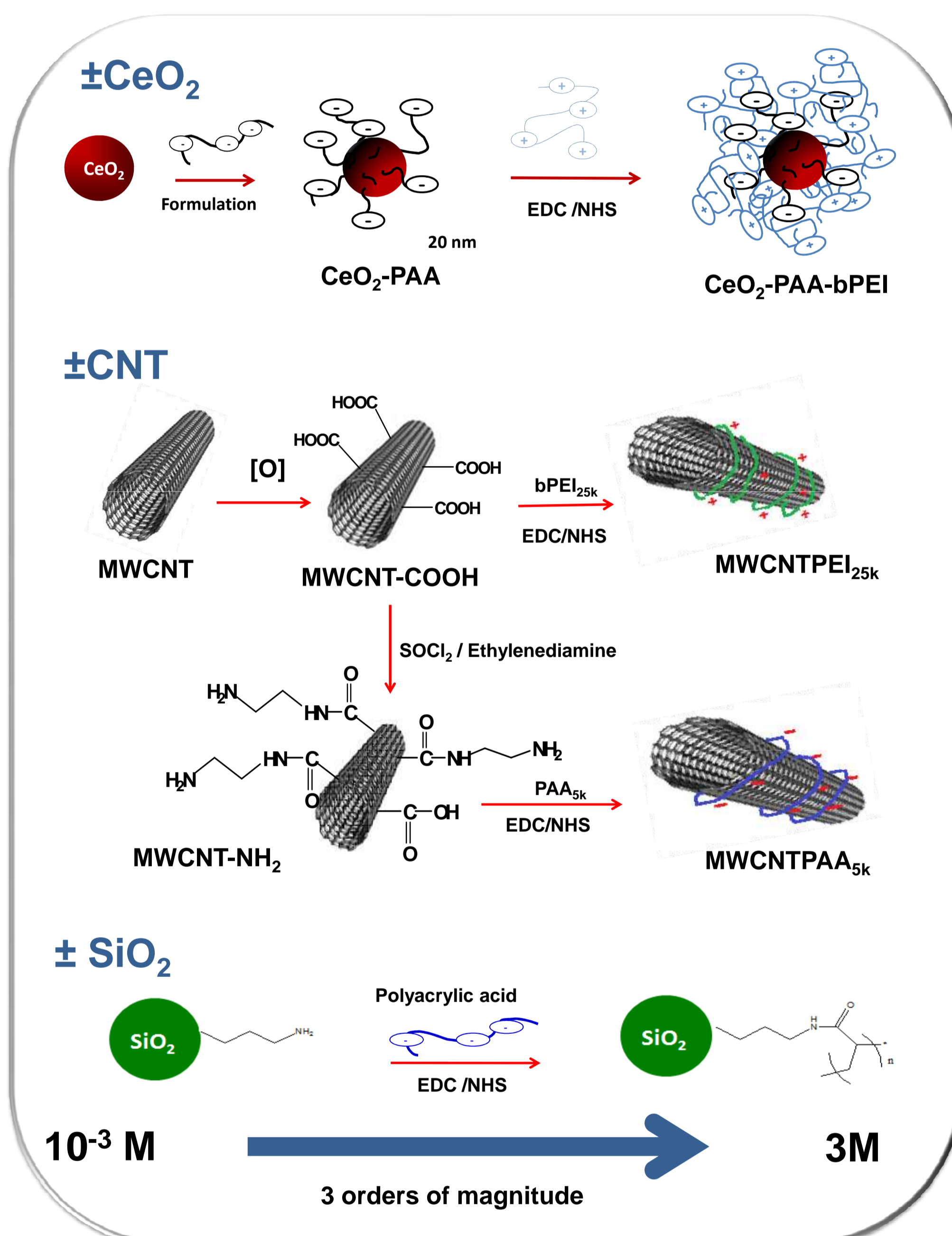
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The complexation between oppositely charged building-blocks in bulk and @ surfaces is controlled by fine tuning the electrostatic interaction through the ionic strength (I_s). Dormant solutions where the interaction is completely switched off are generated. By fine tuning I_s via dilution, The interaction is switched back on via a controlled dilution step triggering the formation of electrostatic complexes in the bulk and the growth of organic/inorganic functional layers at a surface.



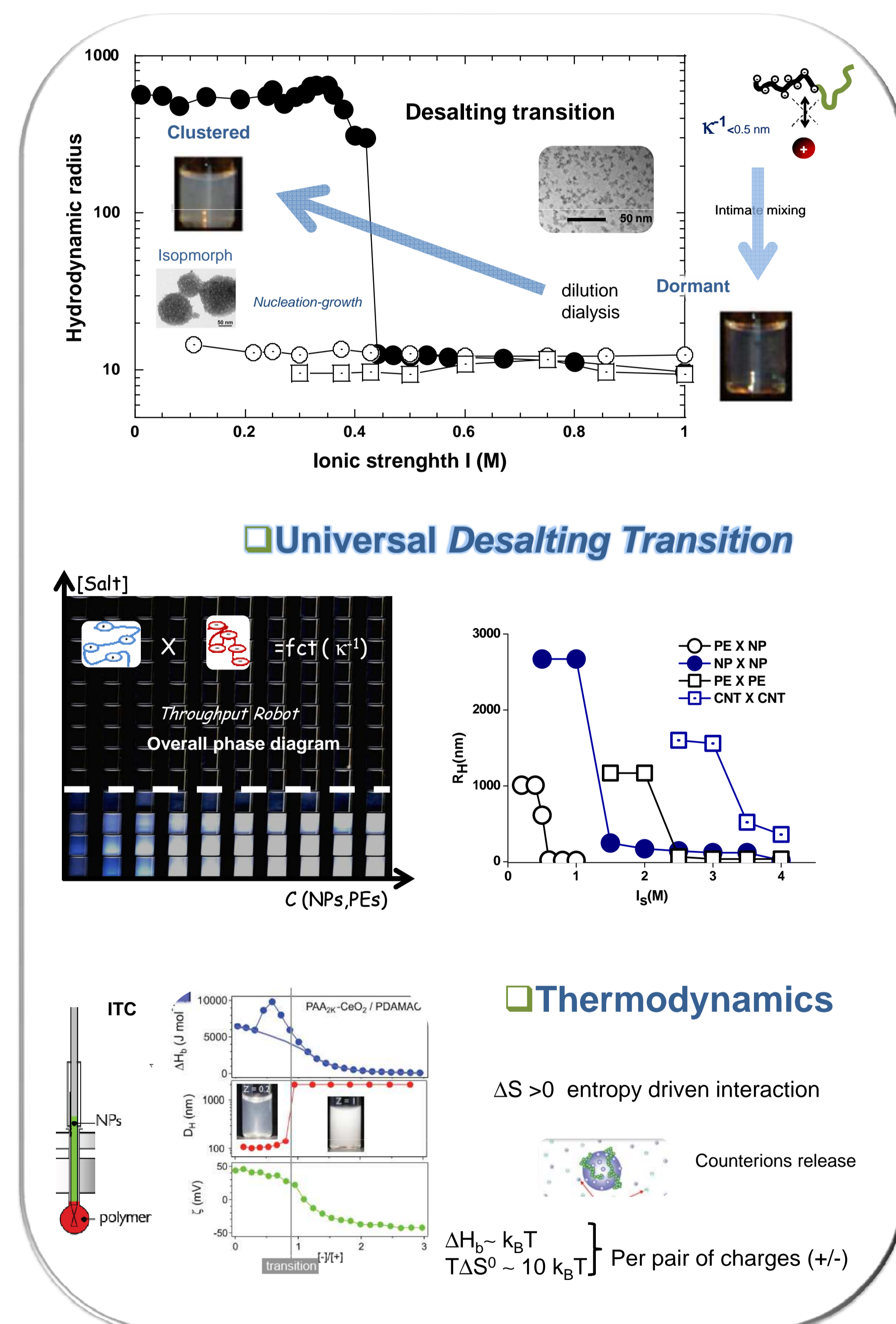
Highly stable cationic & anionic BB



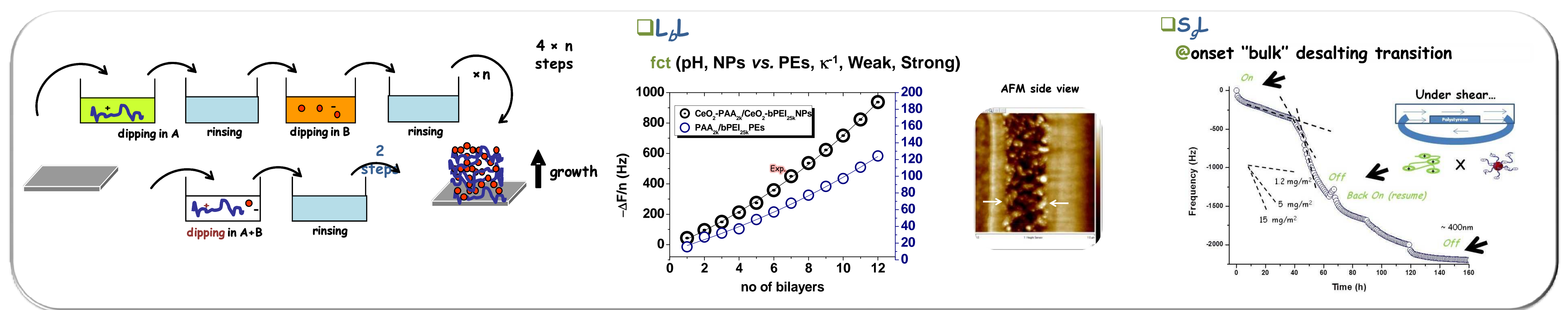
Properties & Functions

- Transparent conductive polymer films (PET)**: Percolated MWCNT bilayers on Si wafer via L_bL. CNT_{COOH}/CNT_{NH2} electro-sterically stabilized with conjugated PE to enable S_gL. $r = R L/D$ ($\sim 2K \Omega$).
- Anti-corrosive Al surfaces**: Wetting+wicking.
- Super hydrophilic & anti UV polymer surface**.
- Superhydrophobic Surfaces (underway)**.

Switching on and off the interaction



Growth @ interfaces L_bL & S_gL



- Highly stable oppositely charged CeO₂ NPs: bulk desalting transition and growth at a surface. *submitted, J. Phy. Chem. C* (2012)
- Stable carbon nanotubes dispersion in very high ionic strength. *submitted, J. Phy. Chem. C* (2012)
- Curr. Opin. Colloid Interface Sci.* (2012) **17**, 97-105
- ACS Appl. Mater. Interfaces* (2011) **3**, 1049-1054
- Adv. Col. Int. Sci.* (2011) **167**, 38-48
- PCT* WO 2010-120267 - Rhodia Inc./CNRS



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