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**Stabilization of ion concentration polarization using a heterogeneous nanoporous junction** PILNAM KIM, Seoul National University, SUNG JAE KIM, JONGYOON HAN, Massachusetts Institute of Technology, KAHP Y. SUH, Seoul National University — We demonstrate a recycled ion – flux through heterogeneous nanoporous junctions, which induce stable ion concentration polarization (ICP) with an electric field. The nanoporous junctions are based on integration of ionic hydrogels whose surfaces are negatively- and positively- charged for cationic selectivity and anionic selectivity, respectively. It is shown that a 'heterojunction' structure with cationic selective hydrogels (CSH) and anionic selective hydrogels (ASH) can be matched up in a way to achieve continuous ion-flux operation for stable concentration gradient or ionic conductance. Furthermore, the combined junctions can be used to accumulate ions on a specific region of the device.

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