Supplementary Information

Characterisation of mass transport in mesh-type flow-field based polymer electrolyte membrane water electrolysers by neutron imaging

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A Nikon 225 XT laboratory X-ray CT system (Nikon Metrology, UK) was employed to analyze the structure of the PEMWE. The scan parameters included a beam voltage of 200 kV, a beam current of 150 μA and a scan rate of 1 frame per second. The entire scan lasted 53 minutes, yielding 3186 radiographs. X-ray orthoslices (with a voxel size of 41 μm) of the PEMWEs with parallel and mesh-type flow-fields are presented in Fig. S1.

For neutron imaging, liquid water generated during cell operation was differentiated from other PEMWE components by normalizing operational images against a dry PEMWE image taken at the beginning of each experiment, as shown in Fig. S2. The total water thickness in each image was computed using the inverted Beer-Lambert law.

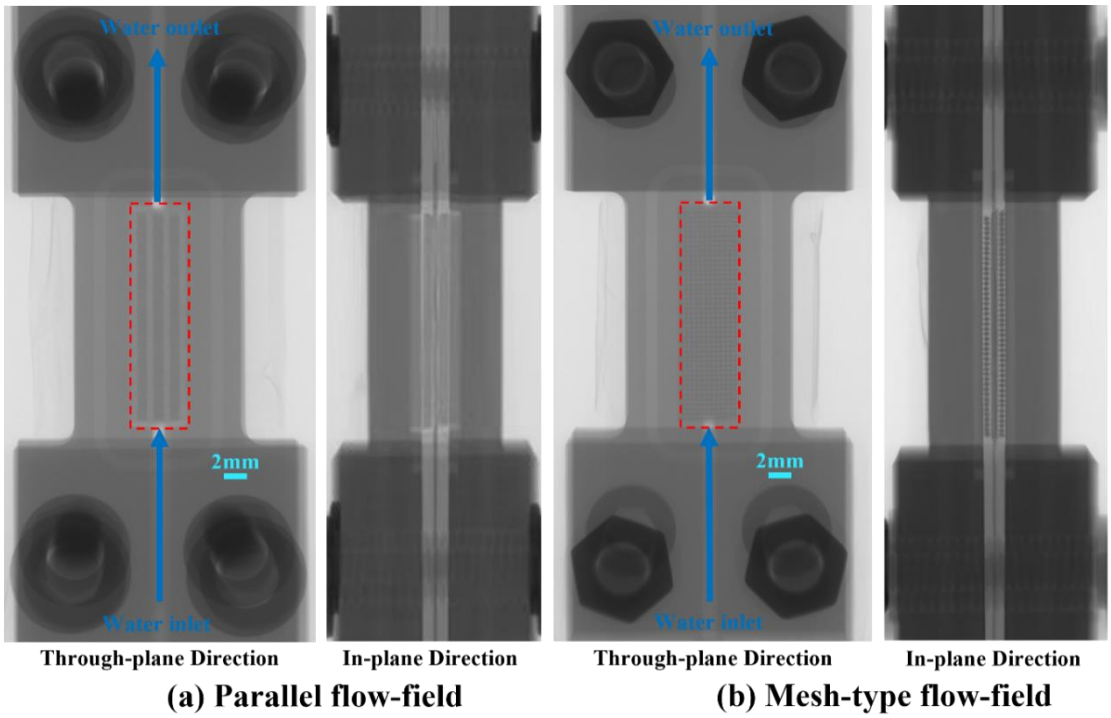

Fig S1: X-ray virtual slices of PEMWEs with (a) parallel flow-field and (b) mesh-type flow-field. The active areas have been delineated by dashed red lines for clarity.

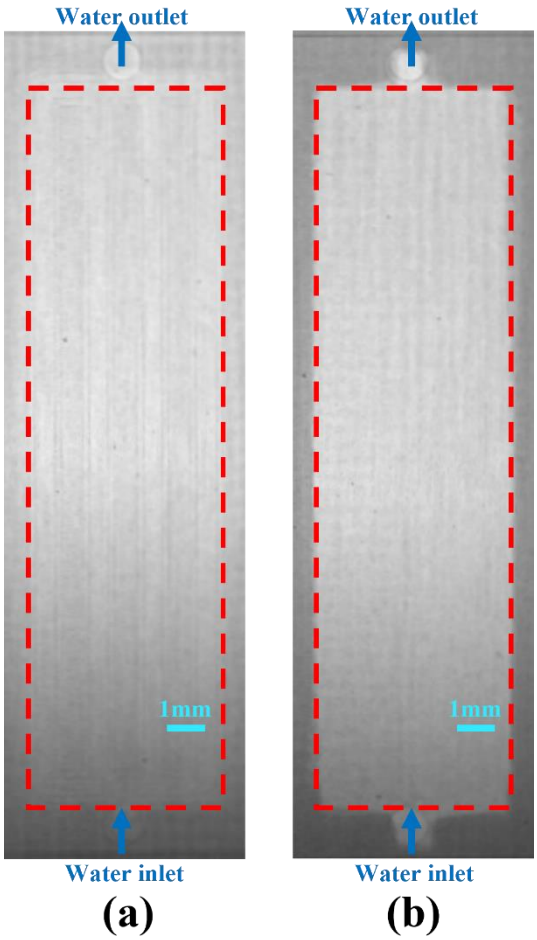

Fig S2: Neutron images of dry PEMWEs with (a) parallel flow-field and (b) mesh-type flow-field. The active areas have been delineated by dashed red lines for clarity.