





EXPLORING CHANCES AND LIMITATIONS OF HIGH RESOLUTION 3D-PRINTING FOR GUIDED WATER PERCOLATION IN GAS DIFFUSION LAYERS OF POLYMER ELECTROLYTE FUEL CELLS

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1. CONTACT ANGLE MEASUREMENT

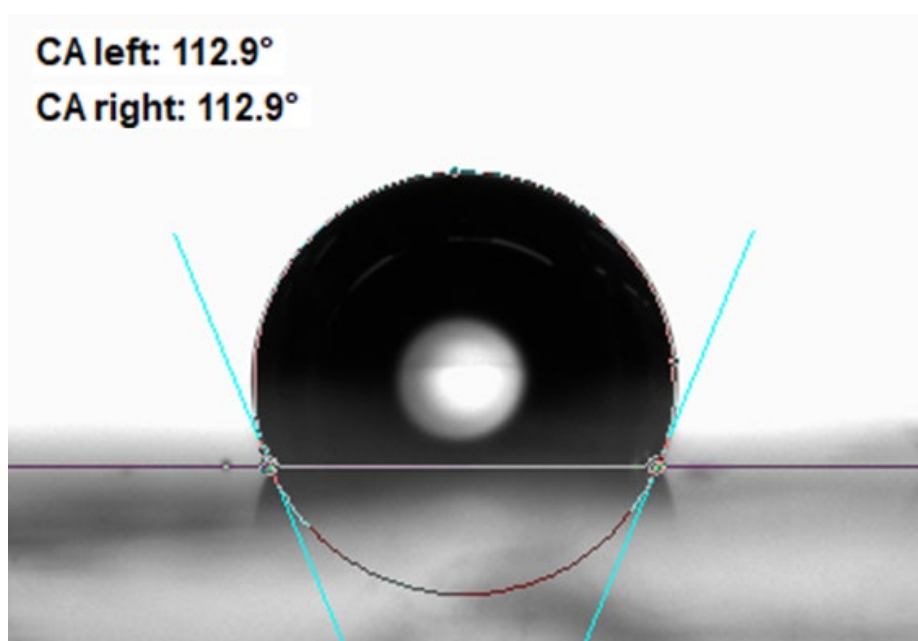


Figure S1: Contact angle of the coating measured on a glass substrate via sessile droplet method.



2. DESIGN OF CAPILLARY PATHWAYS FOR “PSI” SAMPLE

The design principle of the structure introduced in **Figure 5** (main text) is shown in **Figure S2**. The 3-layered lattice structure is printed onto a platform with an integrated pool for liquid injection, as depicted in **Figure S2a**. The pathways for water injection are designed with a throat size of $120\ \mu\text{m}$, whereas constrictions have throats of $50\ \mu\text{m}$ (see also **Figure S2c** and **Figure S2b**, respectively). The full design of each layer is depicted in **Figure S2d** showing the 3rd, 2nd, and 1st layer, respectively. The full lattice structure is shown in transparent in each image. The isolated guiding layers are shown in **Figure S2e**.

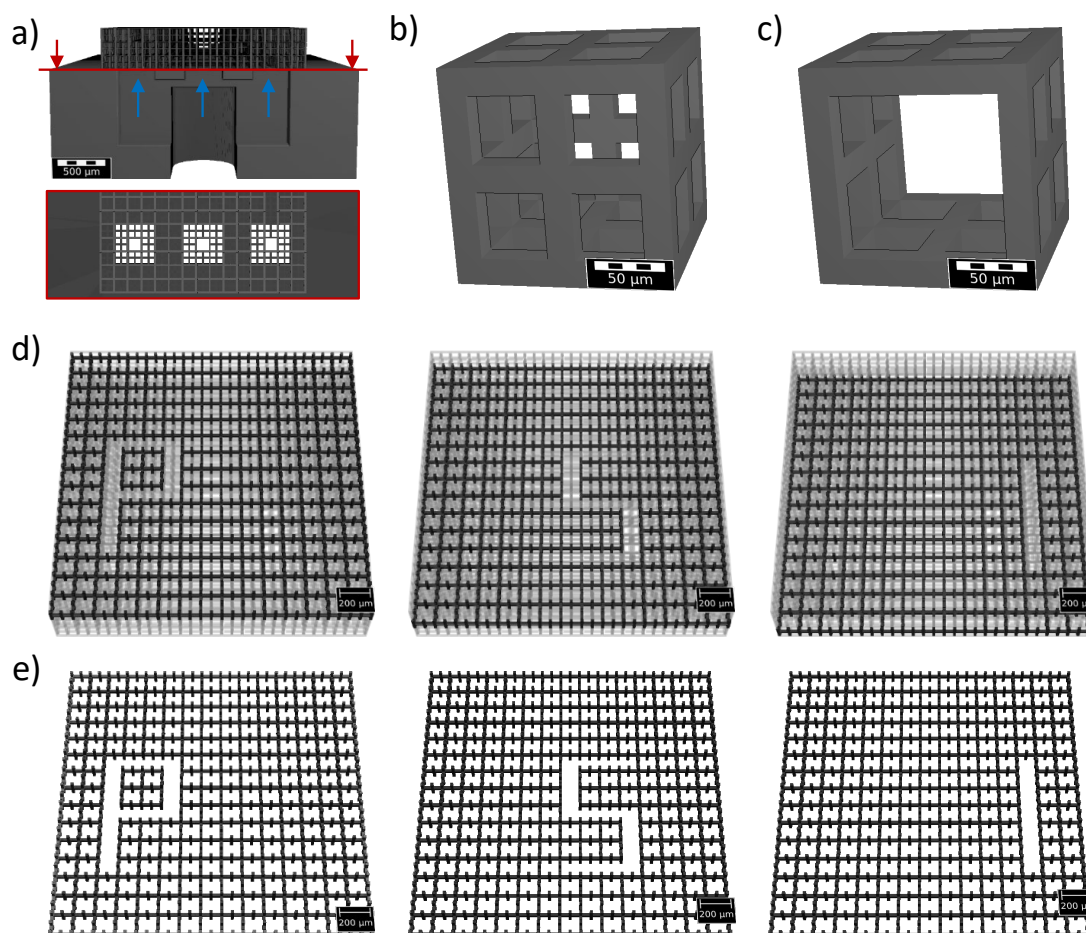


Figure S2: **a)** Cross section (top) and top view (bottom) of the inlet for the injection experiment. **b)** Unit cell design without water passage. **c)** unit cell design with water passage. **d)** Top (P), middle (S) and bottom (I) layer of the full design shown with remaining structure shown in transparent. **e)** Isolated top (P), middle (S) and bottom layer (I).