SUPPLEMENTARY INFORMATION FOR

3D Printing of Stretchable, Adhesive and Conductive $Ti_3C_2T_x$-Polyacrylic Acid Hydrogels

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Table S1. Compositions of $Ti_3C_2T_x$-PAA hydrogels

Ink ratios	$Ti_3C_2T_x$ (g)	AA (g)	H_2O (g)
1 wt.% $Ti_3C_2T_x$-PAA	0.040	3.960	0.531
5 wt.% $Ti_3C_2T_x$-PAA	0.040	0.76	0.531
10 wt.% $Ti_3C_2T_x$-PAA	0.040	0.36	0.531
15 wt.% $Ti_3C_2T_x$-PAA	0.040	0.227	0.531

Table R1 (as Table S2). Electrical conductivity comparison of our $Ti_3C_2T_x$-PAA hydrogels with previously reported conductive hydrogels

Hydrogel sample	Preparation method	Fillers content (wt.%)	Conductivity (S/m)	Refs
$Ti_3C_2T_x$ /PAA	In situ polymerization	0.2	0.42	[36]
$Ti_3C_2T_x$/PAA/Fe^{3+}	In situ polymerization	0.5	3.8	[36]
MXene/PNIPAM/PAAm	Physical crosslinking	1.3	1.092	[40]
MXene/PVA/Zn^{2+}	Freezing-thawing	0.3	0.056	[41]
MXene/PEDOT:PSS	Freezing-thawing	1	1525.8	[42]
$Ti_3C_2T_x$/PAAm/PAAc/Glycerol	In situ polymerization	0.2	1.34	[43]
$Ti_3C_2T_x$ /PAA	In situ polymerization	15	5.13	This work

PNIPAM—poly(N-isopropylacrylamide); PAA—polyacrylic acid; PAAm—polyacrylamide; PVA—poly(vinyl alcohol).

Figure S1. Digital images of varying $Ti_3C_2T_x$-PAA inks after 1 day (a), 2 days (b), and 3 days (c), showing the viscosity increase with time.

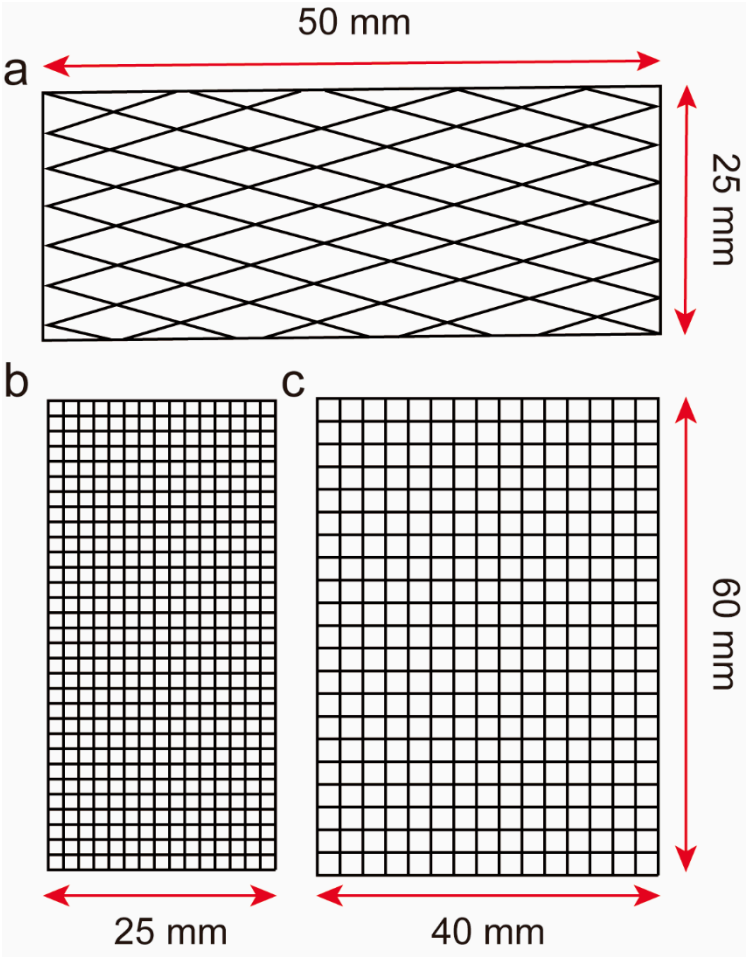

Figure S2. Rhombus and square patterns for 3D printing of $Ti_3C_2T_x$-PAA hydrogels. Designing and printing paths for (a) rhombus pattern, (b) square pattern (size: 2 mm × 2 mm), and (c) square pattern (size: 3 mm × 3 mm).

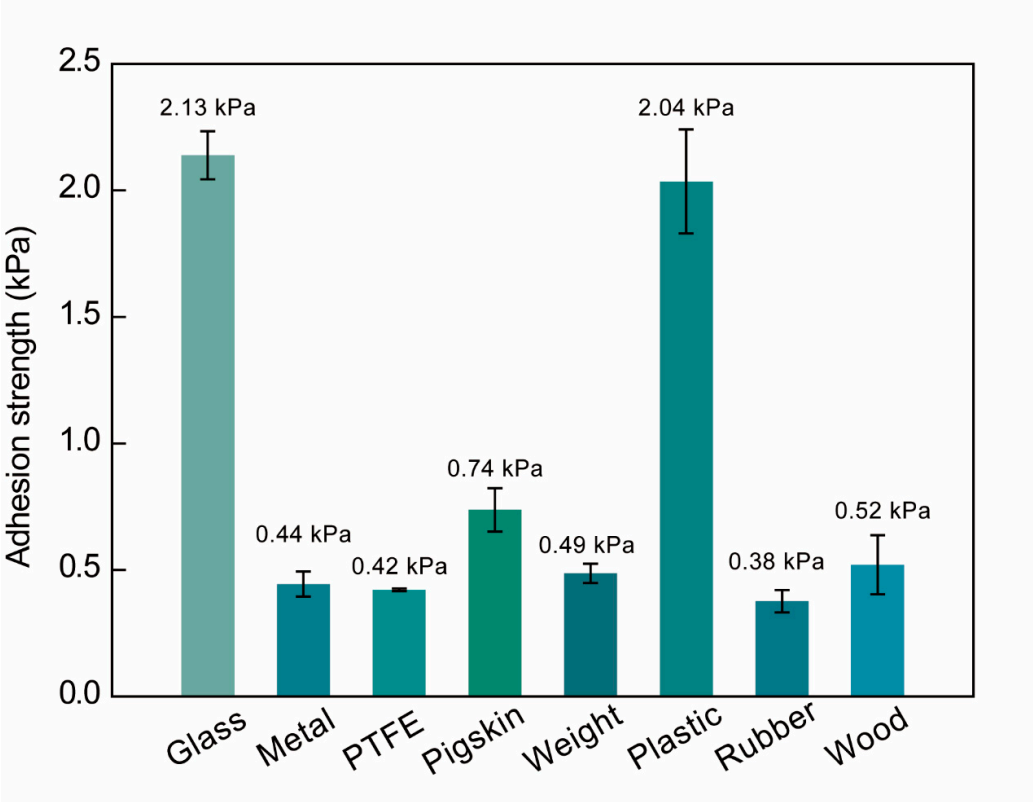

Figure S3. Adhesion strength of 1 wt.% $Ti_3C_2T_x$-PAA hydrogel with varying substrates.