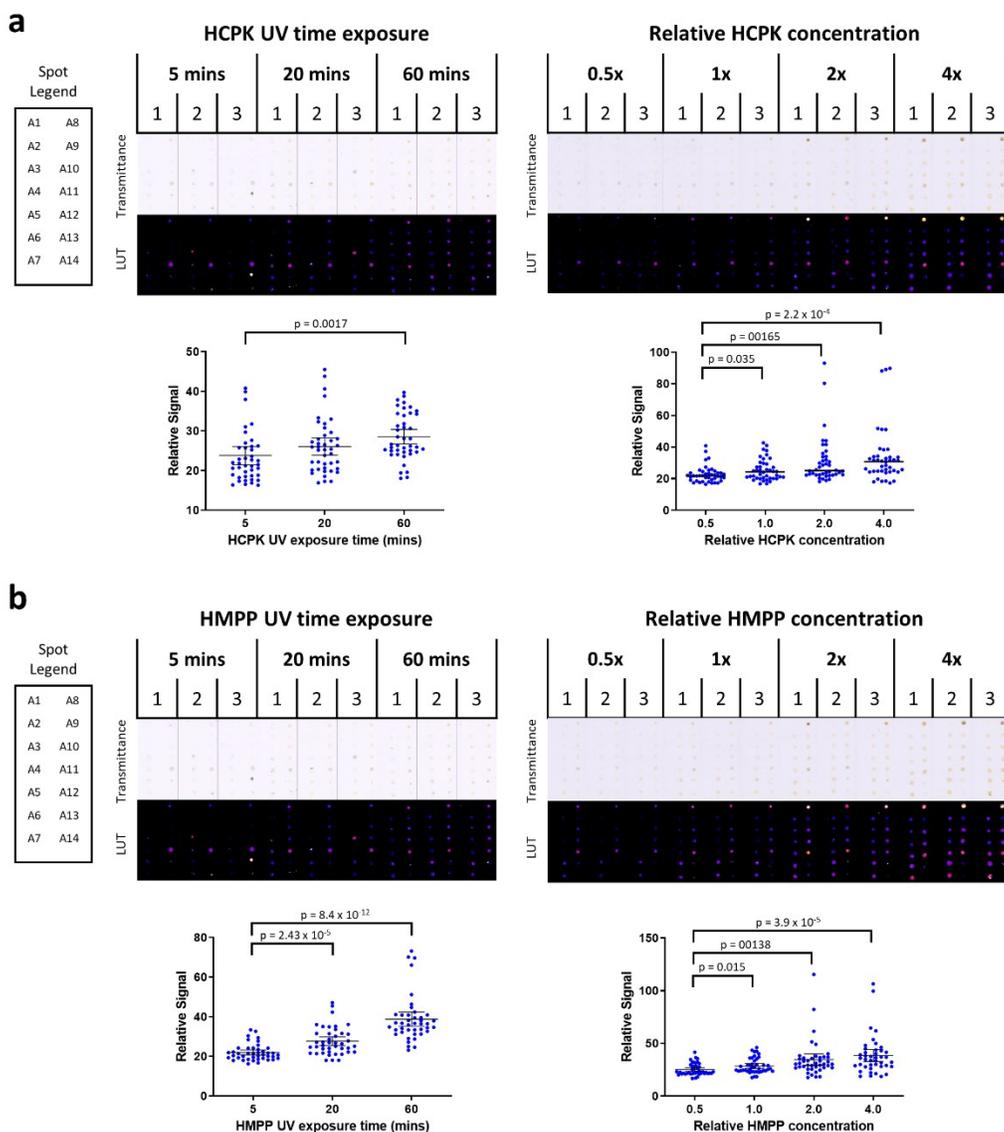
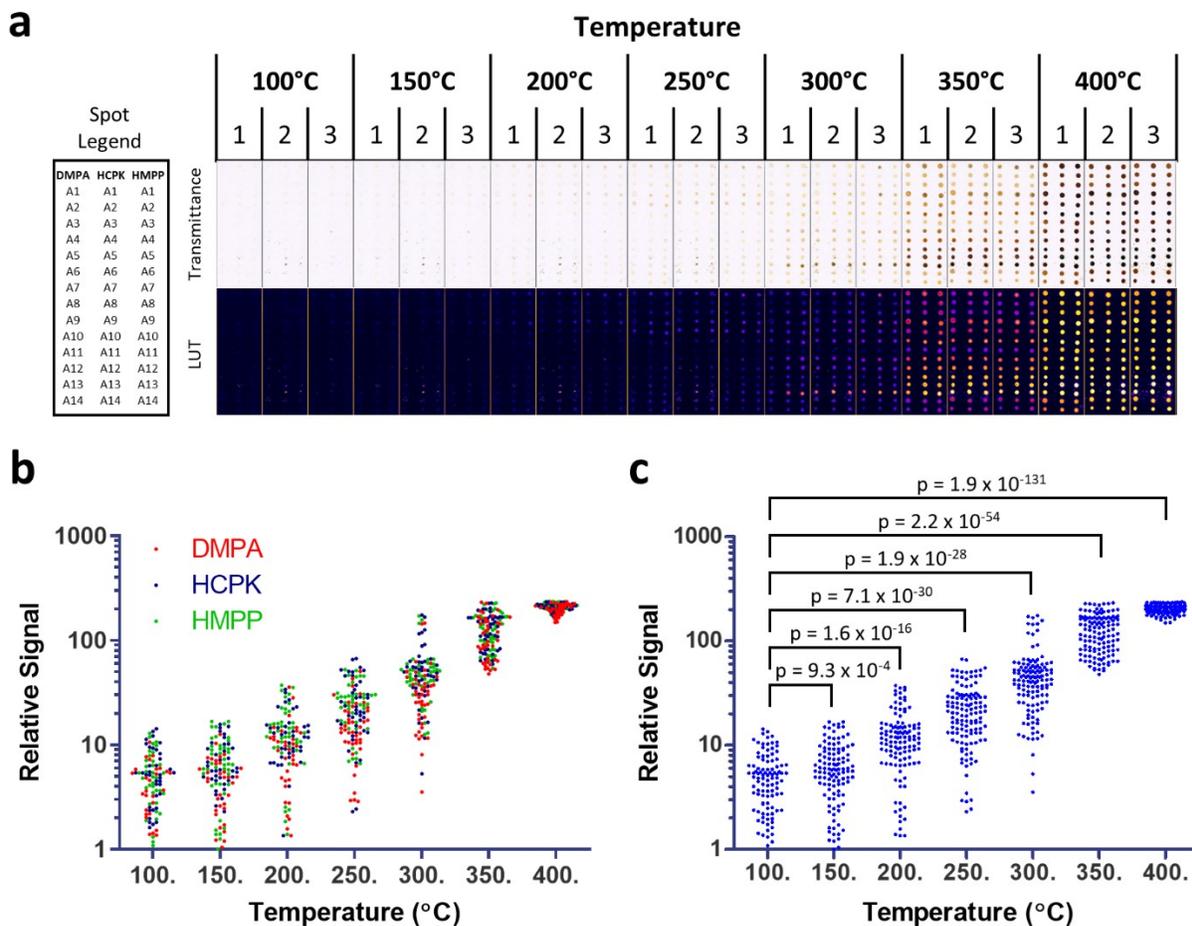


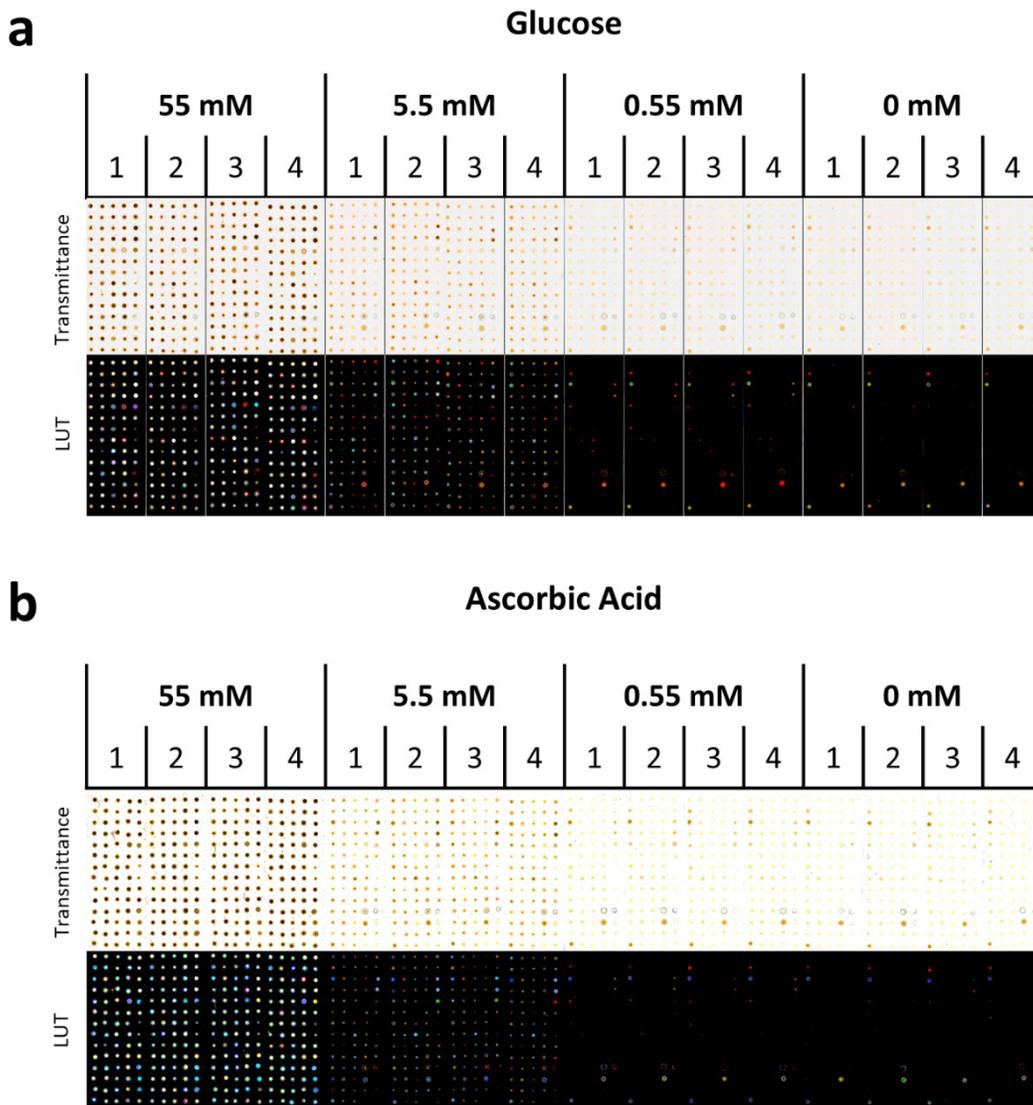
Supplementary Fig. 1. GC-MS data for identified products in DMPA with (top spectrogram) and without (bottom spectrogram) UV exposure. Identified peaks are summarized in the table below the respective spectrograms.



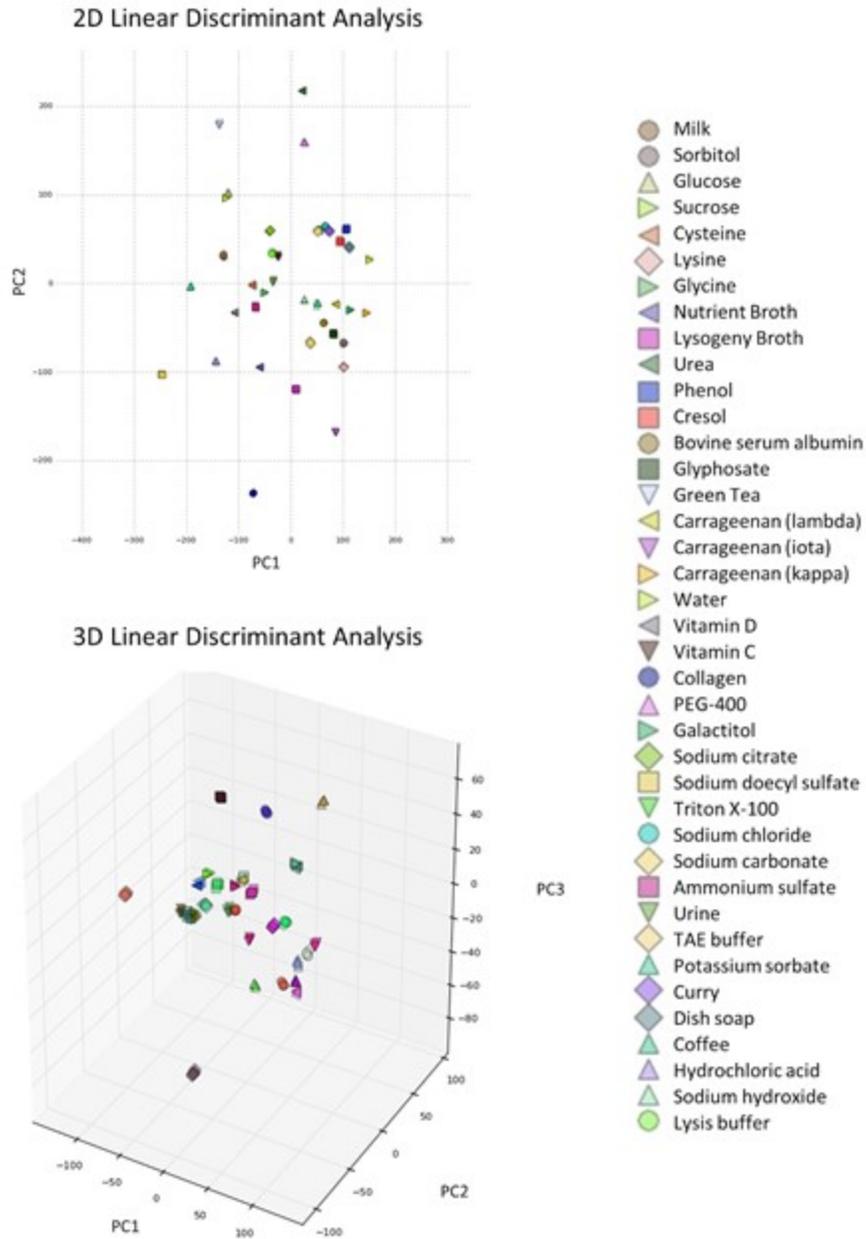
Supplementary Fig. 2. Hydrogels cured with HCPK or HMPP produce colorimetric signals which are dependent on UV exposure time and photoinitiator concentration. An assortment of monomers A1 to A14 containing either HCPK (panel **a**) or HMPP (panel **b**) as a photoinitiator were photopolymerized on silanized microscope slides as shown in the spot legend. Slides in triplicate were studied in relation to the magnitude of colorimetric signals produced as three parameters were varied: UV exposure time (5, 20, 60 mins) and relative photoinitiator concentration (0.5x, 1x, 2x, 4x). Slide images acquired by a flatbed scanner in transmittance mode are shown, along with an inverted LUT (lookup table) version for visual clarity. Scatter plots of the intensity values (relative signal) for each spot are displayed for all tested conditions. Means, 95% CI intervals and p-values are also reported. The data show that the colorimetric signal produced varies positively with increasing UV time and photoinitiator concentration.



Supplementary Fig. 3. HCPK and HMPP exhibit similar colorimetric signal properties as DMPA. **a** An assortment of monomers A1 to A14 containing either DMPA, HCPK or HMPP as the photoinitiator were photopolymerized on silanized microscope slides as shown in the spot legend. Slides in triplicate were studied in relation to the magnitude of colorimetric signals produced as heating temperature increased from 100°C to 400°C. Slide images acquired by a flatbed scanner in transmittance mode are shown, along with an inverted LUT (lookup table) version for visual clarity. **b** A scatter plot of the intensity values (relative signal) for each spot against temperature shows a similar distribution of relative signal for all three photoinitiators. **c** The same scatter plot is displayed by aggregating all the photoinitiators into one single class. Means, 95% CI intervals and *p*-values are also reported.



Supplementary Fig. 4. Working concentration for analytes for colorimetric visualization. 70-spot hydrogel arrays were incubated in quadruplicate with Glucose (panel a) and Ascorbic acid (panel b) at various concentrations (0mM, 0.55mM, 5.5mM, 55mM). All arrays were incubated with the analytes at room temperature for 10 minutes, followed by heating at 250°C for 5 minutes and imaging on a flatbed scanner. Colorimetric profiles are evident at concentrations of 5.5mM and above. Slide images acquired by a flatbed scanner in transmittance mode are shown, along with an inverted LUT (lookup table) version for visual clarity.



Supplementary Fig. 5. Various analyses of the 39-analyte study. Linear Discriminant Analysis (2D and 3D) show tight clustering of all 39 analyte groups. Each symbol represents one array and each analyte was tested with 6 replicate arrays.

	Sensitivity	Specificity	PPV	NPV	F1 Score
bsa	1.00	1.00	1.00	1.00	1.00
coffee	1.00	0.99	0.83	1.00	0.91
collagen	1.00	1.00	1.00	1.00	1.00
cresol	1.00	1.00	1.00	1.00	1.00
curry	1.00	0.99	0.83	1.00	0.91
cysteine	1.00	1.00	1.00	1.00	1.00
dawnsoap	1.00	1.00	1.00	1.00	1.00
galactitol	1.00	1.00	1.00	1.00	1.00
glucose	0.80	1.00	1.00	0.99	0.89
glycine	1.00	1.00	1.00	1.00	1.00
glyphosate	0.80	1.00	1.00	0.99	0.89
greentea	1.00	1.00	1.00	1.00	1.00
hcl	1.00	1.00	1.00	1.00	1.00
icarr	0.80	0.99	0.80	0.99	0.80
kcarr	1.00	0.98	0.63	1.00	0.77
ksorbate	1.00	1.00	1.00	1.00	1.00
LB	1.00	1.00	1.00	1.00	1.00
lcarr	0.20	1.00	1.00	0.98	0.33
lysine	1.00	1.00	1.00	1.00	1.00
lysisbuffer	1.00	1.00	1.00	1.00	1.00
milk	1.00	1.00	1.00	1.00	1.00
na2co3	1.00	1.00	1.00	1.00	1.00
nacitrate	1.00	1.00	1.00	1.00	1.00
nacl	1.00	1.00	1.00	1.00	1.00
naoh	1.00	1.00	1.00	1.00	1.00
NB	1.00	1.00	1.00	1.00	1.00
nh42so4	1.00	1.00	1.00	1.00	1.00
peg400	1.00	1.00	1.00	1.00	1.00
phenol	1.00	1.00	1.00	1.00	1.00
sds	1.00	1.00	1.00	1.00	1.00
sorbitol	1.00	1.00	1.00	1.00	1.00
sucrose	1.00	0.99	0.83	1.00	0.91
tae	1.00	1.00	1.00	1.00	1.00
tritonx	1.00	1.00	1.00	1.00	1.00
urea	1.00	1.00	1.00	1.00	1.00
urine	1.00	1.00	1.00	1.00	1.00
vitaminC	1.00	1.00	1.00	1.00	1.00
vitaminD	1.00	1.00	1.00	1.00	1.00
water	1.00	1.00	1.00	1.00	1.00

Supplementary Fig. 6. Performance of one-shot KNN broken down by analyte class. Sensitivity, specificity, PPV, NPV and F1 Score are shown.