Supplementary Material (ESI) for Chemical Communications

Electronic Supporting Information

Towards MRI microarrays

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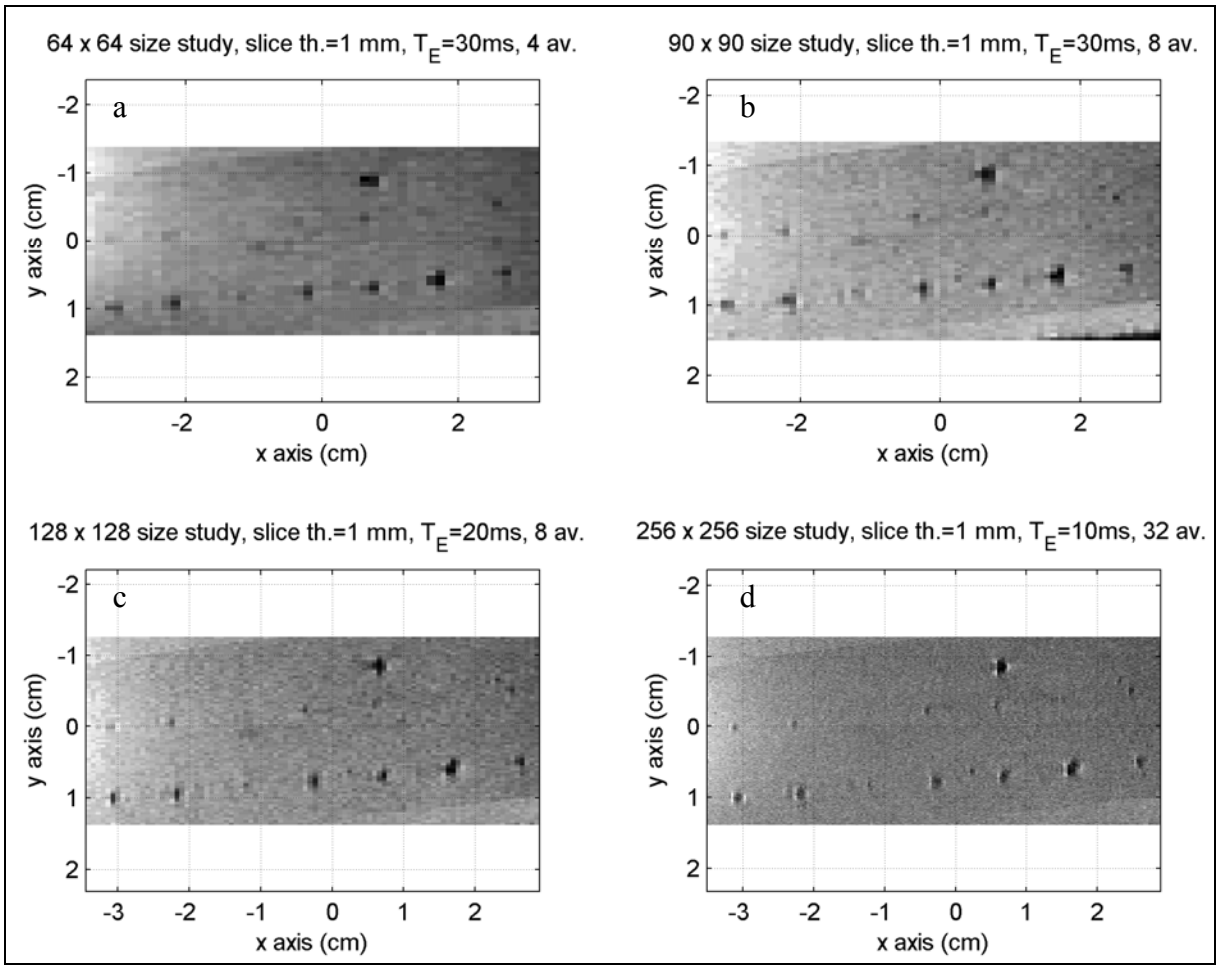
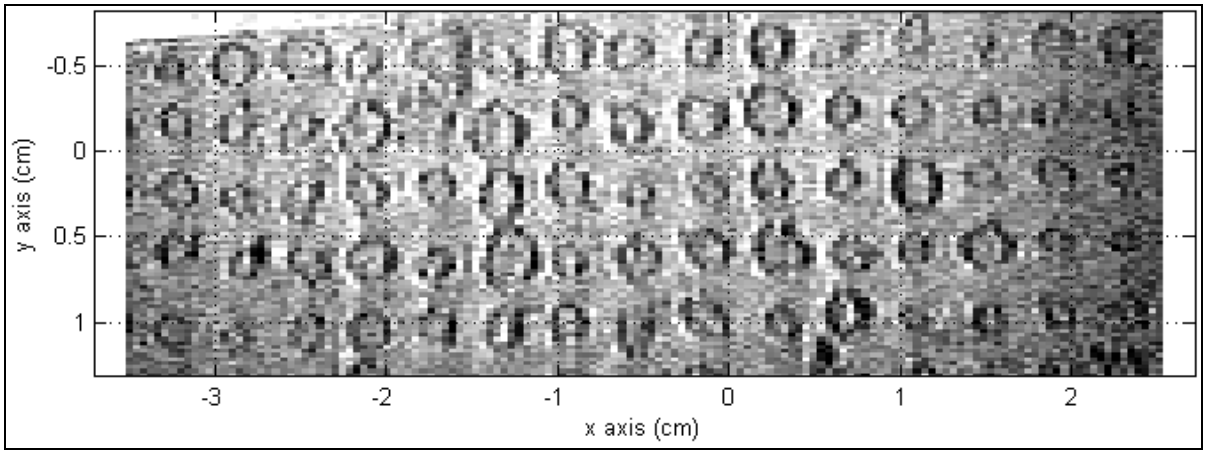
Slide 1.



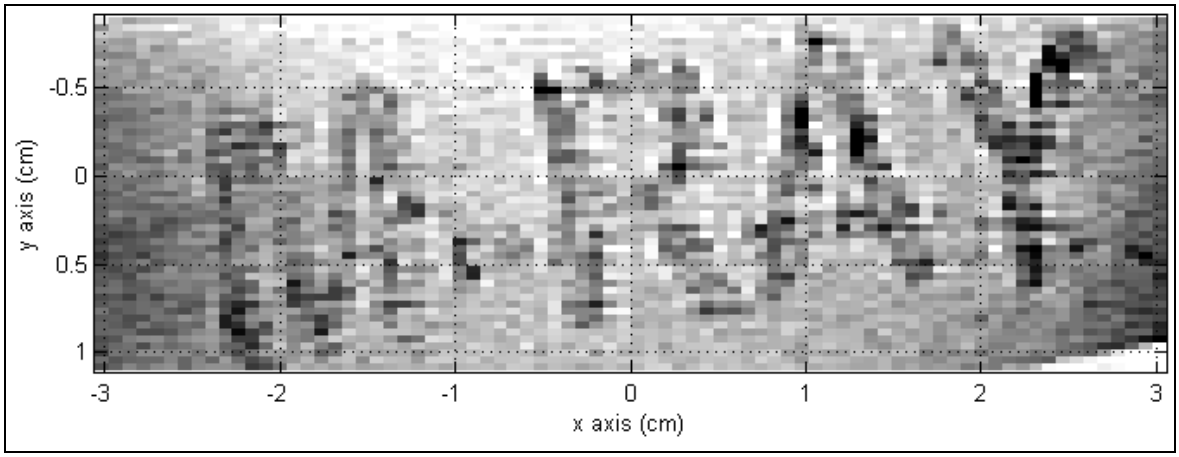
The array was made as described in the communication; however, the two separate lines of SPIO spots, the bottom line with spot size ~ 2 mm and the top line with spot size ~ 1 mm are all positive and imaged in water. It was imaged with increasing spatial resolution of (a) 1370 x 719 μm^2, (b) 978 x 511 μm^2, (c) 688 x 359 μm^2 and (d) 344 x 180 μm^2. Bright pixels in close proximity to dark pixels are seen at the spots, which is the signature of MRI 'susceptibility effect' artefact. Increasing spatial resolution requires longer imaging time (= 28 s for (a), 56 s for (b) and (c), 224 s for (d)), but allows enhanced identification of the smallest spots. The slice thickness is 1 mm for all images and the echo time value was individually tailored to reach a good compromise of SNR to contrast.

Slide 2.



The slide was made by laser etching a 5 x 15 array and spotting with cDNA (all the same). cDNA was then spotted onto the spots directly and allowed to dry. This was subsequently washed before imaging in water. MRI details: RARE sequence, RARE factor = number of lines = 64, T_E = 30 ms, T_E^{eff} = 975 ms, 8 averages, spatial resolution = 1172 x 547 μm^2, slice thickness = 0.5 mm, imaging time = 15.5 s.

Slide 3.



The slide was made by laser etching "M-RAY" the glass slide, and then immobilising cDNA into the etch surface before hybridising with cDNA (as described in the communication) and imaging in water. MRI details: RARE sequence, RARE factor = number of lines = 128, T_E = 30 ms, T_E^{eff} = 1726 ms, 16 averages, spatial resolution = 781 x 391 μm^2, slice thickness = 1 mm, imaging time = 62 s.