Electronic Supplementary Material (ESI) for Dalton Transactions.

Supporting Information

Physicochemical aspects of Epoxide driven nano-ZrO_2 hydrogel formation: milder kinetics for better properties

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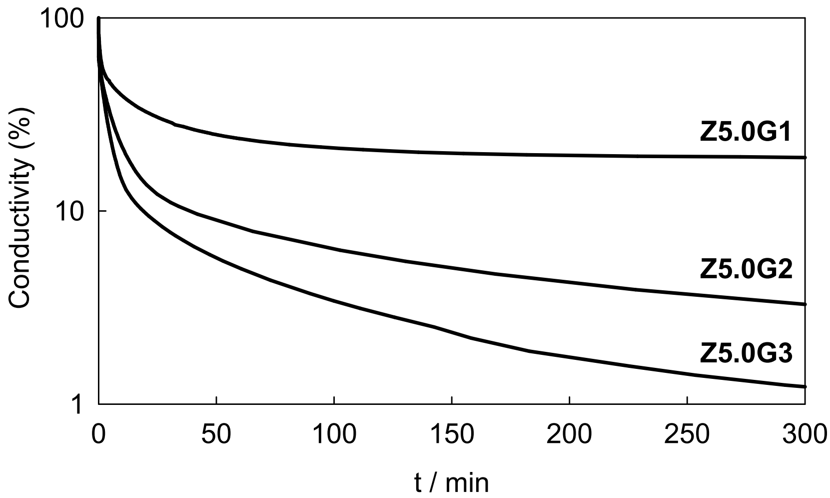


Figure S1. Conductivity (expressed as percentage of the initial value) as a function of time for samples with identical Zr(IV) content and increasing epoxide/Zr(IV) ratio (from the stoichiometric relation G=1 to three times this value G=3).

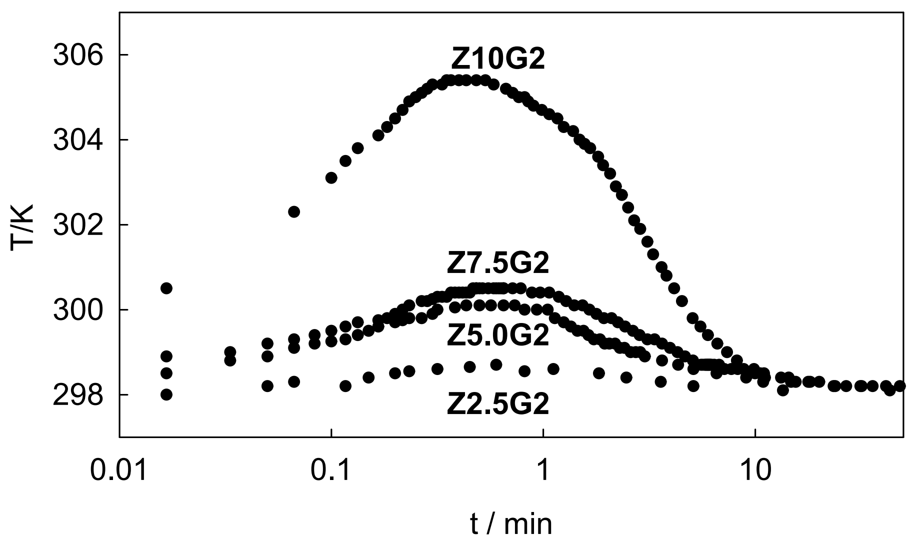


Figure S2. Temperature evolution along the early stages of the gelation process of representative samples.

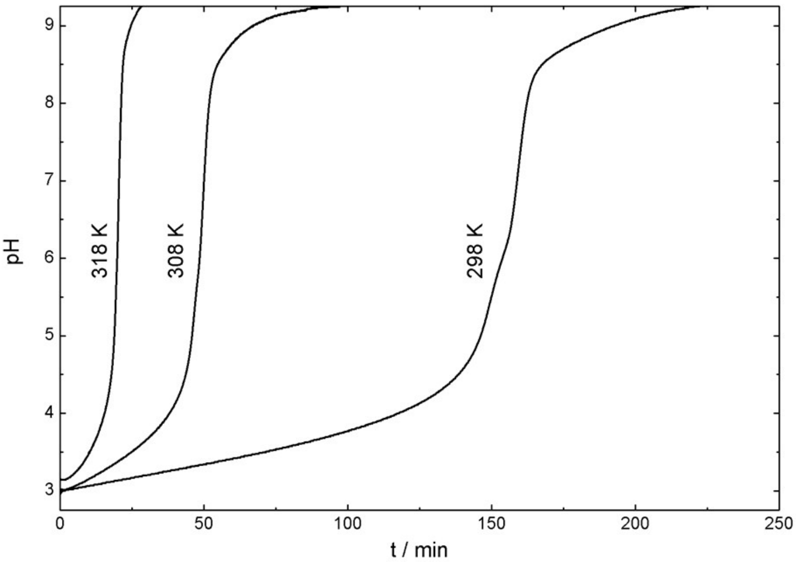
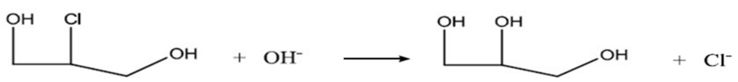


Figure S3. Alkalinisation profiles recorded at increasing temperatures for aqueous solutions containing 2,3-epoxy-1-propanol 0.100 M and NaCl 0.100 M.

	**Eq. S1**

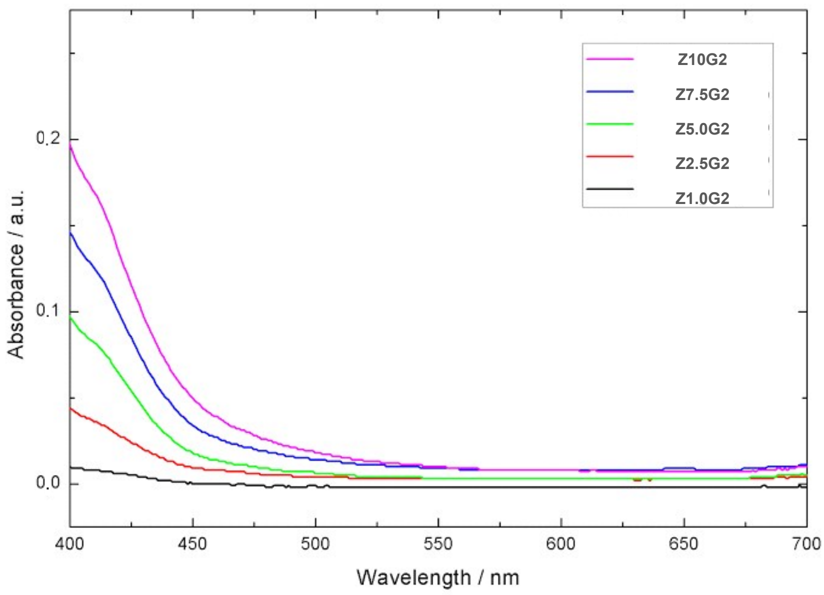


Figure S4. Absorbance of samples with identical epoxide/Zr(IV) ratio (two times the stoichiometric relation, *i.e.* G=2) and with increasing ZrO_2 contents (from 1 to 10 % of ZrO_2 w/v in the final hydrogel).

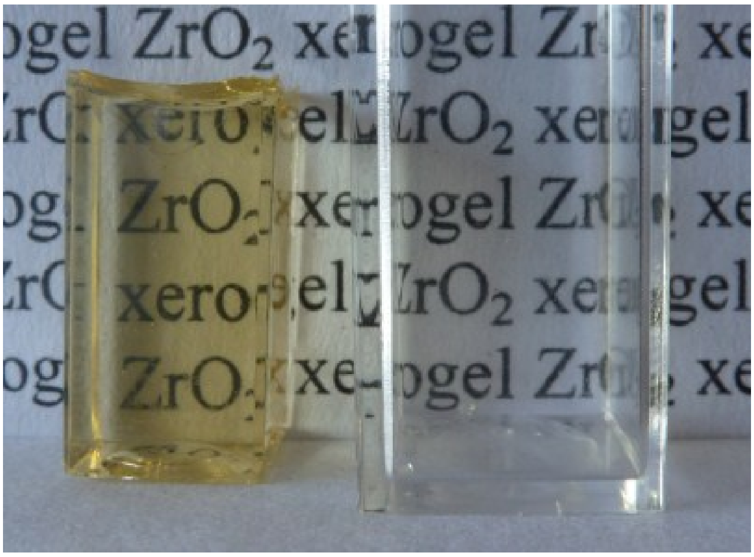


Figure S5. Digital image of xerogel derived from hydrogel sample Z7.5G2 (left) aged in a 10 mm thick plastic cuvette (right). The aging process was carried out under room temperature and humidity, sealing the cuvette with punctured Parafilm®. Several samples were placed inside a common closed recipient (the original expanded polystyrene cuvette holder) and aged for 6 months.

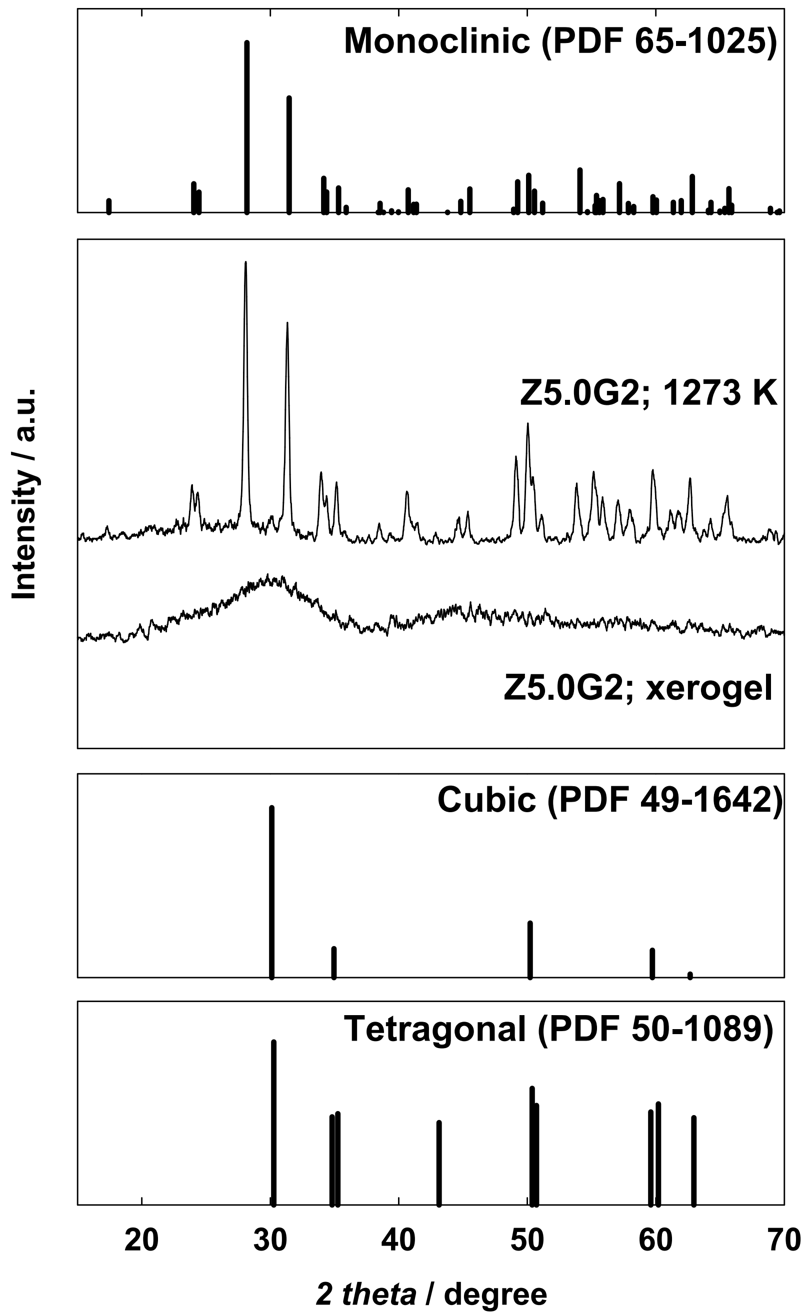


Figure S6. PXRD patterns of sample Z5.0G2 before and after a 5 h-long annealing at 1273 K. Reference diffraction lines from zirconia's polymorphs are also presented

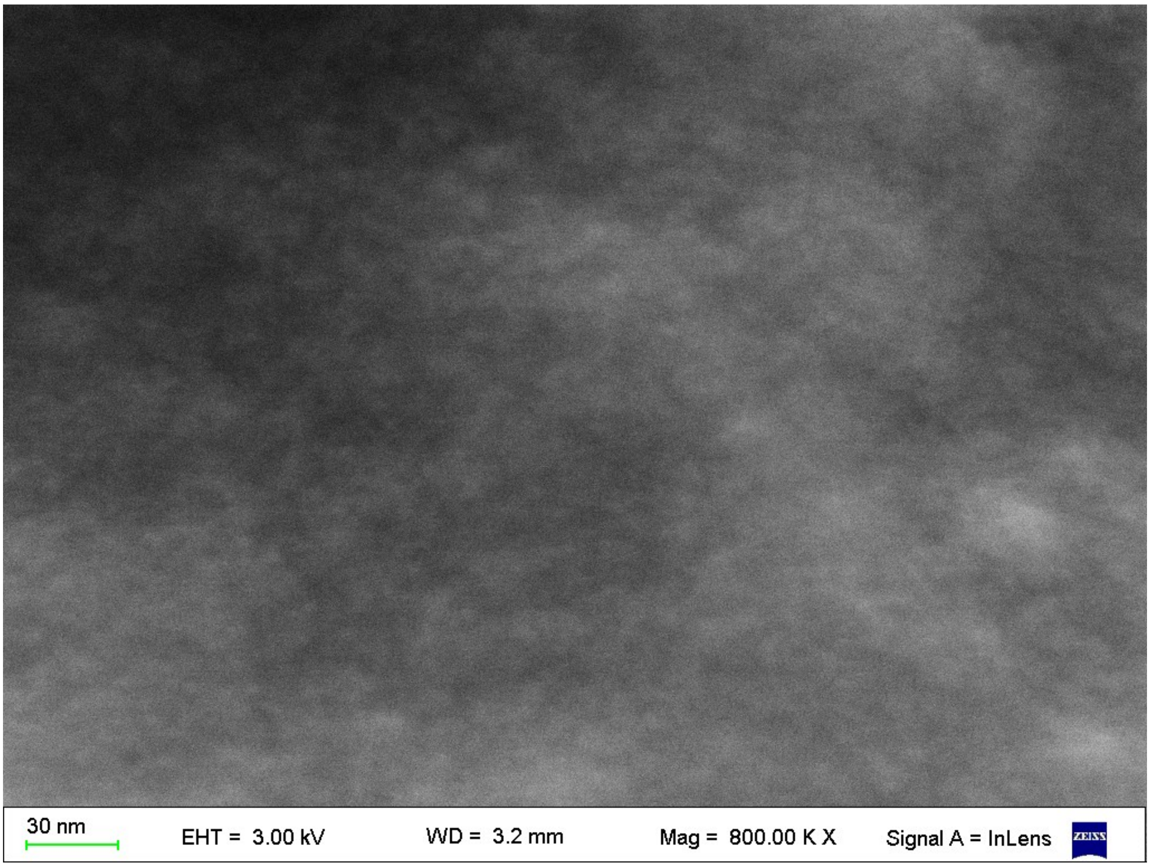


Figure S7. FESEM image of sample Z5.0G2 washed with absolute ethanol and seeded over silicon wafer; no conductive coating was applied onto the sample.