

Table S1. The CO₂, CH₄ and N₂ (mol%) of aqueous-carbonic fluid measured by Raman spectroscopy analyses (50 analyses).

mol%	CO ₂	CH ₄	N ₂
3N1.1a	90	10	
3N1.2b	100		
3N1.3a	90	10	
3N1.3b	90	10	
3N1.4b	100		
3N1.6a		100	
3N1.6b		100	
3N1.6d		100	
3N1.8b	99	1	
3N1.8c		100	
3N1.10a	100		
3N2.1c	90	10	
3N2.1e	90	10	
3N2.2a	91	9	
3N2.2d	91	9	
3N2.2e	90	10	
3N2.3c		100	
3N2.3d	90	10	
3N2.4d	100		
3N2.4f	90	10	
3N2.4g	100		
3N2.5a	92		8
3N2.5c	100		
3N2.5d	100		
3N2.6a	90	5	5
3N2.6b	88	9	3
3N2.7a	100		
3N2.7d	90	10	
3N2.7e	90	10	
3N2.7g		100	
3N2.9a	100		
SHS1.3a	99	1	
SHS1.3d	100		
SHS1.3l	80	20	
SHS1.3p	80	20	
SHS1.7	90	10	
SHS2.3a	96		4
SHS2.3b	95		5
SHS2.3c	100		
SHS2.3d		100	
SHS2.4c	100		
SHS2.5a	92		8
SHS2.5b	99	1	
SHS2.6a	100		
SHS2.6b	100		
SHS2.6c	90	10	
SHS2.9a	100		
SHS2.9d	99	1	
SHS2.9e	99	1	