Letter

Geochemical Perspectives Letters

Ureilite meteorites provide a new model of planetesimal formation and destruction

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Supplementary Information

The Supplementary Information includes:

- Table S-1
- Supplementary Information References

Table S-1 Major element chemistry, elemental ratios and oxygen isotope ratios used as chondritic end-members considered in the Monte-Carlo models. Values for MgO-rich and FeO-rich ureilites (depleted mantle end-members), predicted FeO-rich and MgO-rich ureilite parent body compositions for the 2-end-member model, Venera 13 basalt, predicted ureilite basalt composition and ureilite trachyandesite also given.

	Mg (wt. %)	Al (wt. %)	Si (wt. %)	Fe (wt. %)	Ca (wt. %)	Mg/Si	Al/Si	Ca/Al	Fe/Si	Fe/Al	$\Delta^{17}O$	$\delta^{17}O$	$\delta^{18}O$
CH[1,2,3]	**10.50**	**0.97**	**11.37**	**45.09**	**1.37**	**0.92**	**0.09**	**1.41**	**3.97**	**46.48**	**-1.45**	**-0.60**	**1.64**
CI[1,2,3]	**10.32**	**0.97**	**11.43**	**20.32**	**0.97**	**0.90**	**0.08**	**1.00**	**1.78**	**20.95**	**0.41**	**8.87**	**16.26**
CK[1,3,4]	**15.05**	**1.45**	**15.37**	**25.24**	**1.50**	**0.98**	**0.09**	**1.03**	**1.64**	**17.41**	**-4.16**	**-4.34**	**-0.35**
CM[1,2,3]	**12.21**	**1.17**	**13.79**	**22.04**	**1.25**	**0.89**	**0.08**	**1.07**	**1.60**	**18.84**	**-2.60**	**1.29**	**7.49**
CO[1,2,3]	**14.46**	**1.63**	**16.21**	**24.91**	**1.32**	**0.89**	**0.10**	**0.81**	**1.54**	**15.28**	**-4.28**	**-4.92**	**-1.23**
CR[1,3,5]	**14.05**	**1.23**	**15.51**	**24.46**	**1.27**	**0.91**	**0.08**	**1.03**	**1.58**	**19.89**	**-1.58**	**0.10**	**3.24**
CV[1,2,3]	**14.86**	**1.71**	**15.93**	**23.64**	**1.87**	**0.93**	**0.11**	**1.09**	**1.48**	**13.82**	**-4.01**	**-3.60**	**0.78**
EH[1,2,6]	**11.32**	**0.97**	**17.08**	**31.31**	**0.90**	**0.66**	**0.06**	**0.93**	**1.83**	**32.28**	**0.01**	**2.76**	**5.29**
EL[1,2,6]	**13.64**	**1.14**	**19.57**	**25.88**	**0.57**	**0.70**	**0.06**	**0.50**	**1.32**	**22.70**	**0.01**	**2.90**	**5.56**
H[1,2,7]	**14.09**	**1.14**	**17.19**	**27.56**	**1.21**	**0.82**	**0.07**	**1.06**	**1.60**	**24.18**	**0.73**	**2.85**	**4.08**
L[1,2,7]	**14.99**	**1.20**	**18.66**	**22.04**	**1.31**	**0.80**	**0.06**	**1.09**	**1.18**	**18.37**	**1.08**	**3.52**	**4.70**
LL[1,2,7]	**15.33**	**1.19**	**19.13**	**19.79**	**1.42**	**0.80**	**0.06**	**1.19**	**1.03**	**16.63**	**1.26**	**3.88**	**5.04**
R[1,2,8]	**13.78**	**1.07**	**16.67**	**24.80**	**1.15**	**0.83**	**0.06**	**1.07**	**1.49**	**23.18**	**2.70**	**5.28**	**4.97**
Mg-rich chondrules[9,10]	**25.41**	**1.33**	**22.77**	**1.55**	**1.89**	**1.12**	**0.06**	**1.42**	**0.07**	**1.16**	**-3.01**	**-2.13**	**1.70**
Fe-rich chondrules[9,11]	**22.92**	**0.55**	**15.82**	**18.23**	**1.46**	**1.45**	**0.03**	**2.65**	**1.15**	**33.12**	**-0.49**	**4.40**	**9.40**
CAIs[12,13]	**5.60**	**17.21**	**11.84**	**0.24**	**21.96**	**0.47**	**1.45**	**1.28**	**0.02**	**0.01**	**-22.5**	**-44.0**	**-41.4**
Mg-rich ureilites[3,14]	**24.73**	**0.38**	**21.31**	**7.18**	**1.38**	**1.16**	**0.02**	**3.63**	**0.34**	**18.89**	**-2.08**	**0.00**	**4.00**
Fe-rich ureilites[3,14]	**23.01**	**0.28**	**18.92**	**14.42**	**0.79**	**1.22**	**0.01**	**2.82**	**0.76**	**51.50**	**-0.63**	**4.00**	**8.90**
Fe-rich UPB end member	**23.12 ±1.8**	**0.61±0.11**	**16.37±1.35**	**16.89±1.26**	**1.49±0.2**	**1.42**	**0.04**	**2.55**	**1.07**	**30.56**	**-0.69**	**3.88**	**8.78**
Mg-rich UPB end member	**24.6±2**	**1.07±0.6**	**20.48±2.5**	**7.05±0.6**	**1.75±0.7**	**1.23**	**0.05**	**1.83**	**0.43**	**11.71**	**-2.18**	**0.02**	**4.24**
Venera 13 basalt[15]	**6.87±0.37**	**8.36 ±1.6**	**21.08 ±1.4**	**7.23 ±2**	**5.07 ±0.7**	**0.33**	**0.40**	**0.61**	**0.34**	**0.86**			
Model basalt (B)	**6.87 ±0.36**	**8.36 ±1.1**	**21.08 ±0.9**	**7.23 ±2**	**11.44 ±0.7**	**0.33**	**0.40**	**1.37**	**0.34**	**0.86**			
ALM-A (Trachyandesite)[16]	**2.90**	**7.76**	**28.08**	**4.33**	**5.21**	**0.10**	**0.28**	**0.67**	**0.15**	**0.56**			

References: [1]Burbine and O'Brien (2004); [2]Jarosewich (1990); [3]Clayton and Mayeda (1996); [4]Mason and Wiik (1962b); [5]Mason and Wiik (1962a); [6]Newton *et al.* (2000); [7]Clayton *et al*. (1991); [8]Schulze *et al.* (1994); [9]Hezel and Palme (2010); [10]Clayton *et al*. (1983); [11]Krot *et al*. (2006); [12]McKeegan *et al*. (1998); [13]Srinivasan *et al*. (2000); [14]Warren (2012); [15]Surkov *et al*. (1983); [16]Bischoff *et al*. (2014).
A maximum uncertainty of 1 % on the O-isotope values was considered in the modelling.

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