

OLTINGUGURTNING KIMYOVIY XOSSALARI

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Annotatsiya: Ushbu maqolada oltingugurtning kimyoviy xossalari, tarqalishi hamda uning alohida xususiyatlari muhokama etiladi hamda birikmalar ko'rib chiqiladi.

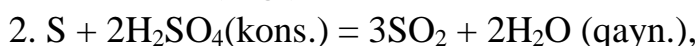
Kalit so'zlar: oltingugurtbeton, element, birikma, massa, xossa.

KIRISH

Oltingugurt (Sulfur), S - Mendeleyev davriy sistemasining VI guruhiga mansub kimyoviy element. Tartib rakami 16, atom massasi 32,064. Tabiiy Oltingugurt 4 ta barkaror izotop ^{32}S , ^{33}S , ^{34}S , ^{36}S dan iborat. Sun'iy radioaktiv izotoplari ^{31}S , ^{35}S , ^{37}S ham olingan. Yer po'stining massa jihatdan 5410~2% ini tashkil qiladi. Dengiz suvida 0,08—0,09% Oltingugurt bor. Tabiatda erkin (tug'ma Oltingugurt) va birikmalar holida uchraydi.

KIRISH

Oltingugurtning eng muhim tabiiy birikmalari metall sulfidlari, mas, FeS_2 — temir kolchedan (pirit), ZnS — aldama pyx, PbS — qo'rg'oshin yaltirog'i yoki glenit, Cu_2S — mis yaltirog'i va h.k. Oltingugurt sulfatlar holida (angidrit CaSO_4 gips $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$, og'ir shpat BaSO_4 , glau-ber tuzi va q.k.) ham uchraydi. Bundan tashqari, Oltingugurt kumir, slanets, neft, tabiiy gazlar, hayvon va o'simlik organizmlarida organik va anorganik birikmalar xrlida mavjud. Mas, oqsilda 0,8—2,4% Oltingugurt bor. Tug'ma Oltingugurt Meksika, AQSH, Italiya, Yaponiya, MDH mamla-katlarida bir necha allotropik ko'rinishlarda uchraydi. Ulardan muhimlari romb va monoklin singoniyali Oltingugurtdir. Romb panjarali Oltingugurt sariqtusli, zichligi $2,07 \text{ g/sm}^3$ (20°da), suyuqlanish temperaturasi $112,8^\circ$, qaynash temperaturasi 445° . Sakkiz burchakli halqasimon Sg tarkibli molekulalardan tuzilgan. Monoklin Oltingugurt prizma shaklidagi tiniq kristallardan iborat, zichligi $1,96 \text{ g/sm}^3$, suyuqlanish temperaturasi $118,9^\circ$. Oltingugurt qizdirilsa, $112,8^\circ$ da erib, sariq tusli harakatchan suyuqlikka aylanadi. 160°da qo'ng'ir tusga kirib, qovushoq bo'lib qoladi. Oltingugurt metalloidlar jumlasiga kiradi. U inert gazlar, azot, yod, platina, oltina&n tashqari deyarli barcha elementlar bilan birikadi. Kis-lorodda 250°da , qavoda 360° da alanganadi.



3. $4S + 6NaOH(kons.) = Na_2SO_3S + 2Na_2S + 3H_2O$ (qayn., Na_2SO_3 qushimchasi),

$4S + 4(NH_3 \cdot H_2O)[kons., issiq] = (NH_4)_2SO_3S + 2NH_4S + H_2O$.

4. $S + H_2 = H_2S$ (150 – 200 °C).

5. $S + O_2 = SO_2$ (280 – 360 °C, xavoda yonishi, SO_3 qushimchasi).

Birikmalari. Oltinugurtning xalq xujaligida eng kup ishlatiladigan birikmalardan biri vadarod sulfidir. Tabiatda vadarod sulfid mineral suvlar va vulqon gazlari tarkibida uchraydi.

H_2S -Vadarod sulfide. Monosulfon sulfonlar H_2S_n ($n=1-8$) gomologik qatorning birinchi vakili rangsiz gaz, termik beqaror. Sovuq suvda yaxshi eriydi, kuchsiz kislota. Tingan eritma ($\approx 0,1M$) vadarod sulfidli suv deb nomlanadi xavoda kup turganda loyqalanadi (ingibetor – saxoroza). Ishqorlar bilan netrallanadi. Kuchli qaytaruvchi oksidlovchi kislotalar galogenlar kislarod tipik oksidlovchilar, oltinugurt dioksid bilan xamda almashinish reaksiyalariga kirishadi. Olinishi: : $118^{3,4}$, $138^{4,6,11}$, $139^{4,5}$, $172^{1,2}$, $412^{4,11}$, 415^{14} , 424^{18} , 836^2 ga qarang.

$Mr = 34,08$; $\rho = 1,539$ г/л (H.Ш.); $t_{\text{суюк}} = -85,54$ °C; $t_{\text{кайн}} = -60,35$ °C;

$k_s = 0,71^{(0)}$, $0,39^{(20)}$, $0,14^{(80)}$;

$v_s = 467^{(0)}$, $258,2^{(20)}$; $91,7^{(80)}$; $K_c^{(-70)} = 1 \cdot 10^{-33}$

1. $H_2S = H_2 + S$ (400 – 1700 °C).

2. $8H_2S \cdot 46H_2O_{(к)}(kilatrat.) = 8H_2S + 46H_2O$ ($t > 0$ °C). 3. $H_2S + H_2O \rightleftharpoons HS^- + H_3O^+$; $pK_k = 6,98$,

$HS^- + H_2O \rightleftharpoons S^{2-} + H_3O^+$; $pK_k = 12,91$.

4. $H_2S + H_2SO_4(kons.) = S \downarrow + SO_2 \uparrow + 2H_2O$ (20 °C),

$H_2S + 3H_2SO_4(kons.) = 4SO_2 \uparrow + 4H_2O$ (qayn.).

5. $H_2S(\text{to'yingan}) + 2HNO_3(kons., sovuq) = S \downarrow + 2NO_2 \uparrow + 2H_2O$,

$H_2S + 8HNO_3(kons.) = H_2SO_4 + 8NO_2 \uparrow + 4H_2O$ (qayn.). 6. $H_2S + NaOH(\text{suyul.}) = NaHS + H_2O$,

$H_2S + 2NaOH(kons.) = Na_2S + 2H_2O$.

7. $H_2S(\text{tuyingan}) + NH_3 \cdot H_2O = NH_4HS + H_2O$.

8. $H_2S + 2NH_3(c) = (NH_4)_2S$ (– 40 °C).

9. $2H_2S(\text{tuyingan}) + O_2 = 2S \downarrow + 2H_2O$ (yorug'likda),

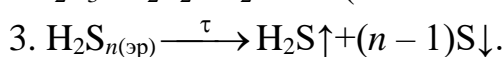
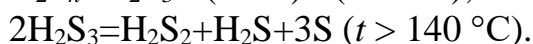
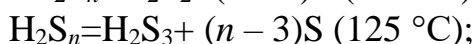
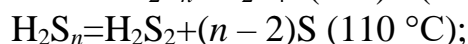
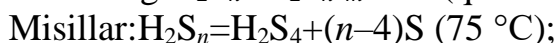
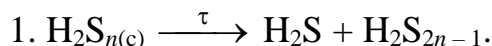
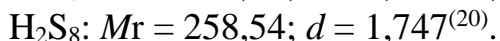
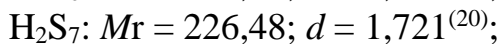
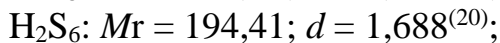
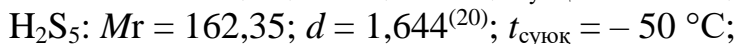
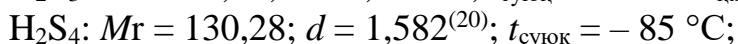
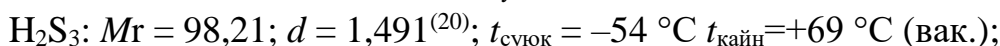
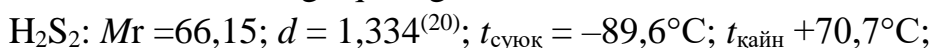
$2H_2S + 3O_2 = 2SO_2 + 2H_2O$ (250 – 300 °C, xavoda yonishi).

10. $H_2S + 4Cl_2 + 4H_2O = H_2SO_4 + 8HCl$.

H_2S_n -polisulfonlar

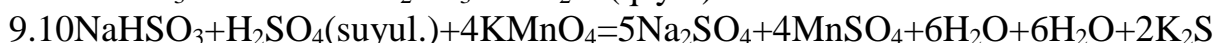
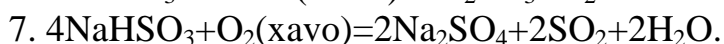
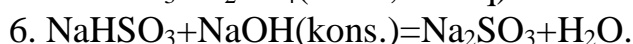
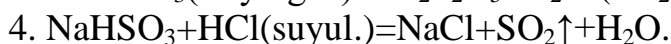
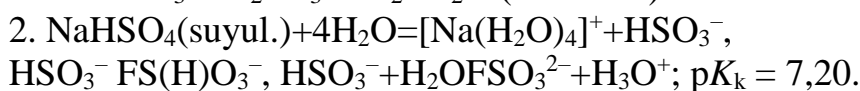
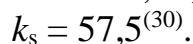
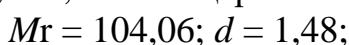
Polisulfonlar H_2S_n ($n=2-8$) aralashmasi sariq (yashil tusli) qovushqoq suyuqlik ($\approx 1,7^{(20)}$). H_2S_n aralashmasi suvni eritmaydi va uzi ham suvda erimaydi (qatlamlarga ajraladi). Barcha H_2S_n lar quydagi zanjir tuzulishiga $HS(S_{n-2})SH$ ega. Tuyingan eritmasi beqaror (ingibetor HCl). Oksidlovchi kislotalar bilan birikadi ishqorlar tasirida parchalanadi. Quyipolisulfonlar oltinugurtning yaxshi eritadi (yuqori H_2S_n lar xosil

bulmaydi). Olinishi:polisulfonlar aralashmasi 41^3 ga qarang; toza $H_2S_n(n=2-4)$ - 414^2 yuqori H_2S_n - 413^{21} ; 414^8 ga qarang.



NaHSO₃-natriy gedro sulfat

Oq qizdirilganda parchalanadi suvda yaxshi eriydi, nosimetrik shakildagi HSO₃-anionning qaytar protolizi xisobiga kislatalar tasirida parchalanadi ishqorlar bilan netrallanadi. Tipik qaytaruvchi xavo kislarodi bilan osson oksidlanadi. . Олиниши: 28^{19} , 30^6 , 416^9 га қаранг.



ADABIYOTLAR RO`YXATI

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