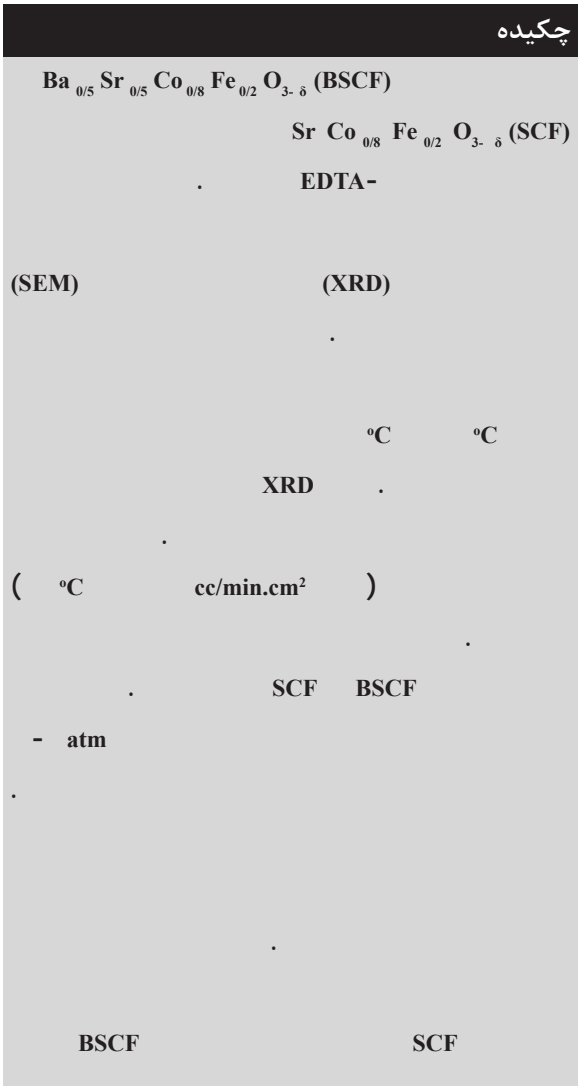
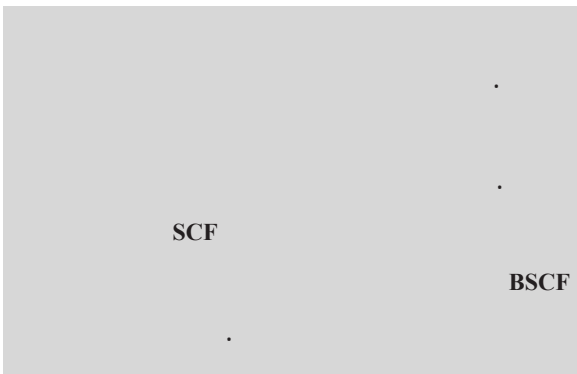




پژوهش‌نفت
 سال بیستم
 شماره ۶۱
 صفحه ۳۸-۲۹، ۱۳۸۹

ganjie@ripi.ir



PSA'

Steele .

Teraoka .[] $\text{cm}^2 \text{cm}^{-1} \text{min}^{-1}$

[]

(MIEC) -

$\text{La}_{1-x}\text{Sr}_x\text{Co}_{1-y}\text{Fe}_{0.2}\text{O}_{3-\delta}$

[-] Sr Co

Sr Co_{0.8} Fe_{0.2} O_{3-δ} [-]

PSA

/

$\text{cm}(\text{STP})/\text{min}.\text{cm}^2$

[]

/

[-]

A ABO_x

B

(La,Sr)FeO_{3-δ} B

[] A

[] Cr A

Sr B

Co (Ti, Bi, Pb, Ga, Al)

MIEC

[]

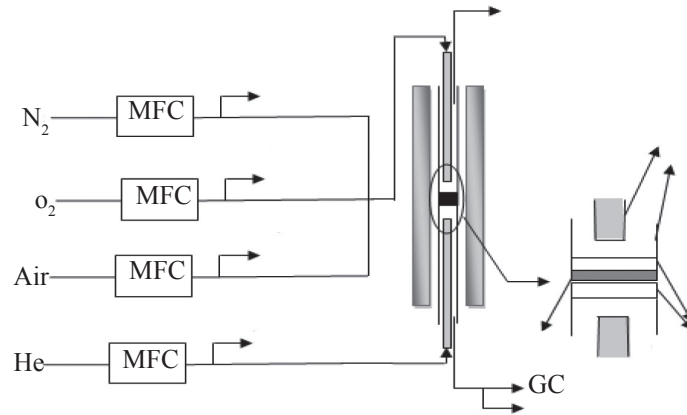
Shao

Ba SCFO Sr

(+) (YSZ)

[-]

...
EDTA :
MIEC
Teraoka
 $Sr Co_{0.8} Fe_{0.2} O_{3-\delta}$
Kruidhef
[]
[]
[-] KJ/mol
°C
°C/min
BSCFO
EDTA-
(- °C)
[]
BSCFO SCFO
PW XRD)
(CuK α BSCFO SCFO
(SEM)
[] Kim
MIEC
()
nmlit/min
°C °C/min
°C/min °C min () SCFO BSCFO
°C
nmlit/min (EDTA)
 $Ba_{0.5} Sr_{0.5} Co_{0.8} Fe_{0.2} O_{3-\delta}$ (BSCF)
(XRD) $Sr Co_{0.8} Fe_{0.2} O_{3-\delta}$ (SCF)
EDTA
pH



() $\text{SrCo}_{0.8}\text{Fe}_{0.2}\text{O}_{3-\delta}$
 XRD
 BSCF SCF - °C
 (hkl)
 SCF
 (SEM)
 BSCFO SEM /

(- °C)

N_2 O_2

BSCF SCF

:[]

$$J_{\text{N}_2}^{\text{leak}} = C_{\text{N}_2} \times F / S \quad (1)$$

$$J_{\text{O}_2}^{\text{leak}} = J_{\text{N}_2}^{\text{leak}} \times \sqrt{28/32} \times 0.21/0.79 \quad (2)$$

(J_{O_2})

BSCF

J_{O_2}

SCF

$$J_{\text{O}_2} = C_{\text{O}_2} \times F / S - J_{\text{O}_2}^{\text{leak}} \quad (3)$$

C_{O_2} C_{N_2}

F

S

:[] ()

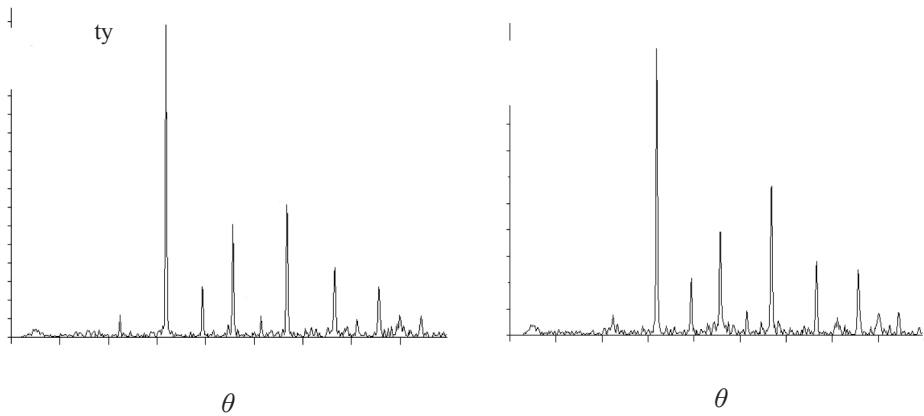
$$J_{\text{O}_2} = K \exp(-E_a / RT) \quad (4)$$

R

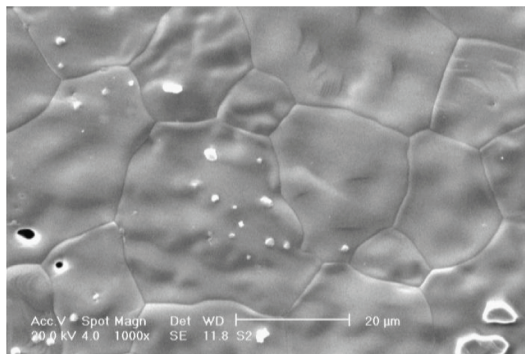
E_a

T

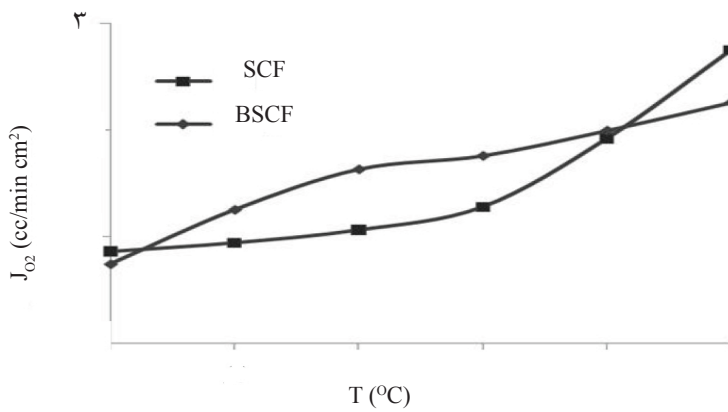
$\text{Ba}_{0.5}\text{Sr}_{0.5}\text{Co}_{0.8}\text{Fe}_{0.2}\text{O}_{3-\delta}$



BSCF : SCF :



BSCF SEM



SCF BSCF

BSCF < SCF

SCF < BSCF

(T_c)

SCF

BSCF

BSCF

SCF

T_c

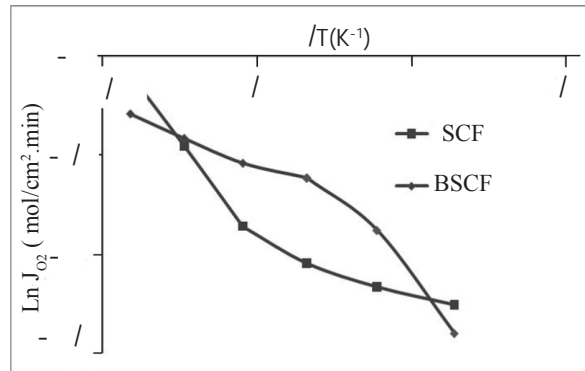
/T

J_{O2}

E_a

()

BSCF



BSCF SCF

| BSCF SCF | | |
|----------|------|-----------------------------|
| SCF | BSCF | () E _a (KJ/mol) |
| / | / | () E _a (KJ/mol) |
| / | / | T _c (°C) |

[]

T_c

(N₂+O₂)

ml/min

SCF

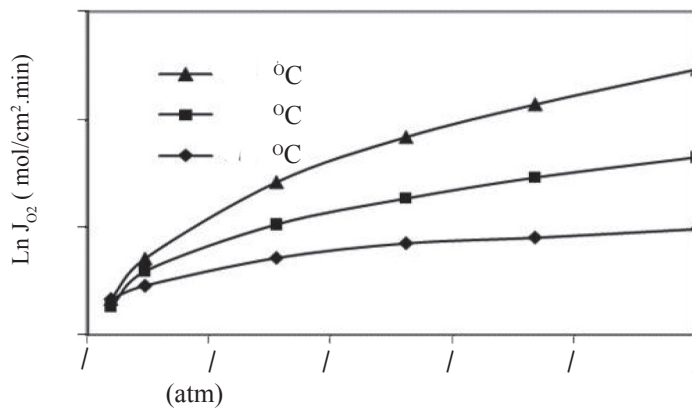
°C

ml/min

SCF

T_c

[]



BSCF

C_i D_i

$J_{O_2} = J_i / 2F$ () atm
 F ml/min cm^2

$\mu_1 \rightarrow \mu_2$
 : () () []
 $J_{O_2} = \frac{k_{i,0} C_i}{4F} (P_1^{0.5} - P_2^{0.5})$ ()

$\mu_1 \rightarrow \mu_{1,g}/2, \mu_2 \rightarrow \mu_{2,g}/2$
 : () () (Oxygen Vacancy)
 $J_{O_2} = \frac{D_i C_i}{2FL} \ln(P_1 / P_2)$ ()

L_c (L)
 $(P_1^{0.5} - P_2^{0.5})$
 $\ln(P_1/P_2)$ L_c
 L_c
 $(P_1^{0.5} - P_2^{0.5})$
 $\ln(P_1/P_2)$
 $(L = / mm)$

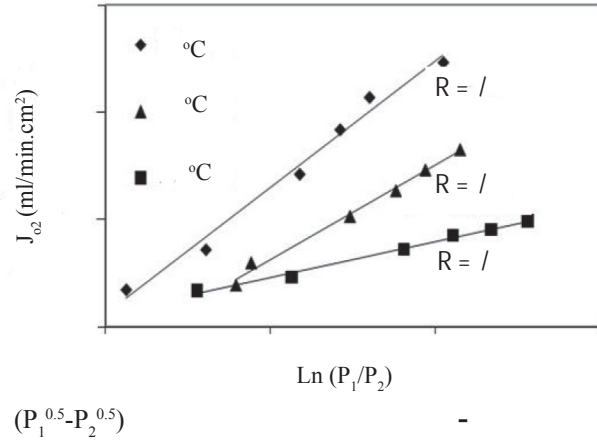
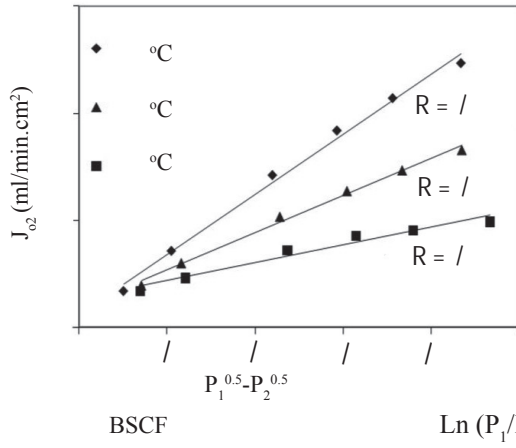
L_c / mm BSCF Kim
 : [-]

$J_{i1} = k_{i,0} c_i (e^{\mu_{1,g}/2RT} - e^{\mu_1/RT})$ ()
 $J_{i2} = k_{i,0} c_i (e^{\mu_2/RT} - e^{\mu_{2,g}/2RT})$ ()
 $k_{i,0}$ - J_i
 μ c_i

SCF BSCF : $\mu_g = RT \ln(P / P_0)$ ()
 P_0 P

XRD BSCF atm

SCF XRD : ()
 $J_i = -\frac{\sigma_i}{4F^2} \frac{d\mu}{dx} = -\frac{D_i C_i}{RT} \frac{d\mu}{dx}$ ()



BSCF

XRD

BSCF

SCF

[]

SCF

SCF BSCF

SCF BSCF

SCF



() θ
BSCF : SCF :

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