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		2015	6	308.6000	0	0.0000	2	125.0000
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1 “ ” Sr2Fe1.5Nb0.1Mo0.4O6-Ce0.8Sm0.2O1.9 SFMNb-SDC XRD SEM TEM SFMNb-SDC XRD

SFMNb-SDC EIS SDC

40%

650 700 750 800 0.31 0.47 0.72 1.22 W cm-2 SFMNb-SDC IT-SOFCs International Journal of Hydrogen Energy

2 Sr2-xCaxFe1.5Mo0.5O6-δ (SCFM)

Ca Sr SFM

SCFM Ca 0.4

800 1.26 W cm-2 J Power Source

3 Sr2Fe1.5-xScxMo0.5O6-δ (x=0 0.05, 0.10)

Sr2Fe1.5-xScxMo0.5O6-δ (SFScxM)

800 27.8 S cm-1 0.12 Ω cm2

SFSc0.05M 800

1230 mW cm-2 SFSc0.05M SOFCs

4 CuMn2O4 MnCo2O4 NiMn2O4

SOFCs X XRD

SEM

CuMn2O4

σ=78 S cm-1 MnCo2O4 σ=60 S cm-1 NiMn2O4 σ= 21 S cm-1 (EIS) CuMn2O4 0.14 Ω cm-2 MnCo2O4 NiMn2O4 NiO-YSZ|YSZ|CuMn2O4 MnCo2O4 NiMn2O4 800 H2 1V 1456 892 865 mW cm-2 J Power Source

5 Ni CMF (Ni-CMF)

TPR GC Ni

CMF

CO 800 433.41 S cm-1 Ni-CMF LSGM LSCF

800 580.7 mW cm-2

750 50 mA cm-2 Ni

Electrochimica Acta

6 Ce0.6Mn0.3Fe0.1O2 CMF

XRD BET CMF

24.62 m2 g-1 CMF LSCF

LSGM 800

238.0 mW cm-2 Ni CMF

520.2 mW cm-2

7 YSZ 690 °C 8YSZ 95.8% 8YSZ 0.055 S cm-1 8YSZ 565 °C SOFC SOFC SOFC YSZ

8 Ni Ce(Mn, Fe)O2 Ni-CMF SOFC HDCFC CMF CMF h-NFs Ni CMF−NiO B Sr2Fe1.5Mo0.5O6-δ Sr2Fe1.4X0.1Mo0.5O6-δ HDCFC Bi SFBM Sr2Fe1.4X0.1Mo0.5O6-δ SFBM Ni

9 - SD-Pt-Co/CNT SD-PtCo/CNT PtCo/CNT Pt/CNT Pt/C PtCo ECSA CNT 1.0 M 2.0 MKOH SD-PtCo/CNT 0.82 mA g-1 PtCo/CNT (0.21 mA g-1) Pt/CNT (0.68 mA g-1) Pt/C (0.18 mA g-1) 3.9 1.2 4.6 SD-PtCo/CNT −0.70 V (vs. Hg/HgO) PtCo/CNT Pt/CNT Pt/C −0.60 V −0.59 V −0.58 V (vs. Hg/HgO) SD-PtCo/CNT SD-PtCo/CNT

10 Hummers

G Ni

Ni@Pd/rGO - Ni@Au@Pd - Ni@Au@Pd/rGO -

Pd -

Ni@Au@Pd/rGO Pd Pd

Au Au

EOR CO Pd -

Ni@Au@Pd/rGO Au Pd

11 CoO

CoO@N/S-CNF

OER ORR

CoO@N/S-CNF

CoO@N/S-CNF ORR

0.84 V vs. RHE

Pt/C 1.55 V vs RHE

10 mA cm-2 CoO@N/S-CNF OER

CoO@N/S-CNF ΔE 0.828

V Pt/C CoO@N/S-CNF

ORR OER CoO /

CoO@N/S-CNF

Co9S8CT/Co@N/S-CN

Co9S8CT/Co@N/S-CNF Co9S8

Co9S8CT/C

o@N/S-CNF ORR Carbon

12 CNFs

N/S Co9S8@N/S-CT Co

9S8

(Cu
Mn2O4) (CNT) CuMn2O4@
CNT Co9S8@N/S-CT
CuMn2O4@CNT Pt/C
2.1.2
1 396 m2 g-1
MMHCSs

MMHCSs
MMHCSs
1000 530 mAh g-1 60 A g-1
180 mAh g-1 Journal of Power Sources
2 Si/C
NCs 75% 3D
CNCs

0.5 A g-1 2950 mAh g-1
100 1226 mAh g-1 Si/CNCs
10 A g-1 547 mAh g-1
Journal of Power Sources
3 -CMK-3
CMK-3
CMK-3

N- SP
“N-O”

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CNF

5 La0.5Sr0.5Co
O2.91 La0.5Sr0.5CoO2
.91 100 mA g-1
7205 mAh g-1 2.66V La0.5Sr0.5CoO2.91

1000 mAh g-1 85
Electrochimica Acta
6 (3DOM) ZnCo2O4
XRD BET ZnCo2O4
127.2 m2 g-1 3DOM ZnCo2O4
(KB) 6024 mAh g-1
100 mA g-1 ZnCo2O4
220 mV ZnCo2O4
3D Material Letter
7 MnCo2O4
Ni foam

MnCo2O4@Ni foam

0.1 mA cm-2 2.2-4.4 V 500 mAh g-1 300
1400 h 100 mAh g-1 140 ACS Appli
ed Materials & Interfaces
8
3.5 mg cm-2

MnCo2O4 CuCo2O4@Ni

Li2O2

Li2CO3 LiOH Li2O

9 “ ” “ ”

hollow cupric oxide sphere HCOS

HCOS-S

1 C 3.5 mg cm-2 1015

mAh g-1 3.6 mAh cm-2 500 883 mAh g-1

98% Journal of Materials Chemistry A

10 carbon Nanofiber CNF

polyvinylidene fluoride PVDF

CNF/PVDF 1C 1

739.2 mAh g-1 100 680 mAh g-1

CNF/PVDF “

”

Journal of Power Sources

11 (carbon fiber cloth CFC)

“

”

1C 920 mAh g-1 Electr

ochimica Acta

12 MnO2@GP α -MnO2

100 m-2 g-1 MnO

2@GP 1400 mAh g-1 100 600 mAh g-

1 10 100 0.3% MnO2 @GP

MnO2 MnO

2 @GP E

lectrochimica Acta

2.1.3

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/ - / / WS6

4 / - Organic Electronics

2 13% SM315

- SM315

-

SM315

SM315 SM315

WS-5

Dyes and Pigments

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CoFeO4

Co9S8 / /

J. Power Source

2.1.4

1 Mn2Co1Ox

NH3-SCR 150-300 100% NOx

N2

SO2 Mn2Co1Ox

NOx Mn4+ Co3+

Catalysis Communications

2 LSM LSMM

6% NO 1000ppm LSMM LS

M /BZCY/NiO 800 12 mW cm-2 45 mW

cm-2 LSMM H-SOFC

NO O2

NO

3

/

80%

4

BET SE

M Ni-Mo

Ni-Mo/Al2O3

n n

5 Pd-Cu Mo2C

Pd-Cu Pd

MoO3 20%CH4/H2

Mo2C Mo2C

α

6 C-H C-H

C-H

C-H

PCU JP-10 C-H

C-H

2.2.

1 “ ”

60 Ah 250 Wh kg-1 GJB6789-2009z

28 V

60 Ah 100V 60Ah 210 Wh kg-1

200 Wh kg-1

2 PE PP

PE PP 4

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863 583

5 SCI 17 2 ACS Applied materials & interfaces, J. Power Sources, Electrochem Commun, Int. J. Hydrogen Energy, Electrochimica Acta

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2016

1 - SnO2

- SnO2

SnO2

SnO2 SnO2@C SnO2@C@S-GAs

3 1200 1765 1795 mAh/g

70 SnO2 150mAh/g 150

SnO2@C 405 mAh/g SnO2@C@S-GAs 150

867 mAh/g 1 Scientific Reports, 2015, 5, 12154, I

F=5.5) The 10th Sino-US Nano Forum

2

Pd

Pd

Pd

PdNi PdIr PdIrNi Pd

Pd PdNi

PdIr

PdIr PdNi Ni Pd PdIrNi

-0.68V 128mA/cm2 -0.08V

Pd

3

SEI

GO o-CNT

GO/o-CNT

GO/o-CNT

4

N S B P O

N

ORR 400 900 N

ORR 900 ORR

C3N4 N 900

ORR

ORR

2016-20

17

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2 SOFC

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1 “ ”

CC CNTs

MnO2

600 1800

2 “ ”

SEI

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Cu|Li

Li+

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XRD

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Kotov David Rooney

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250 Wh/kg

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SOFC 2

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(45)		43
(25)		24
(20)		18
		94

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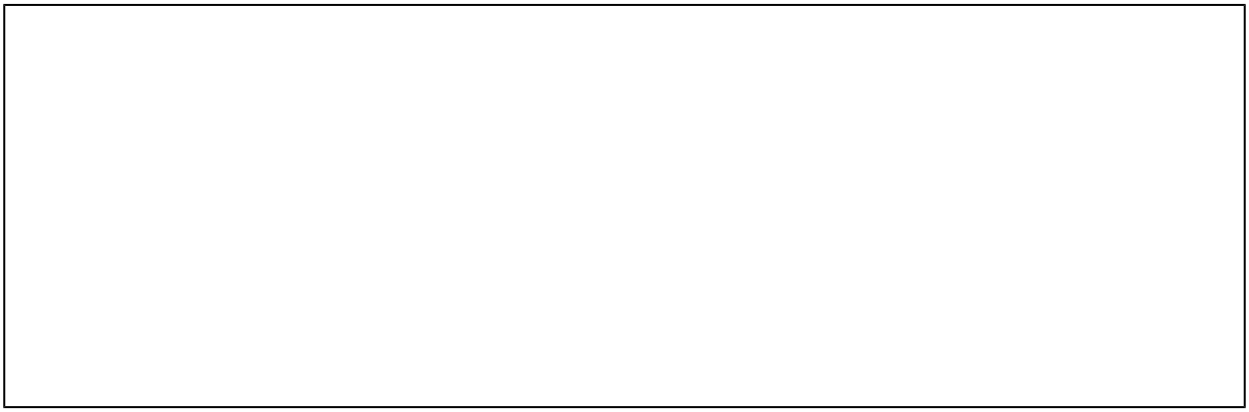

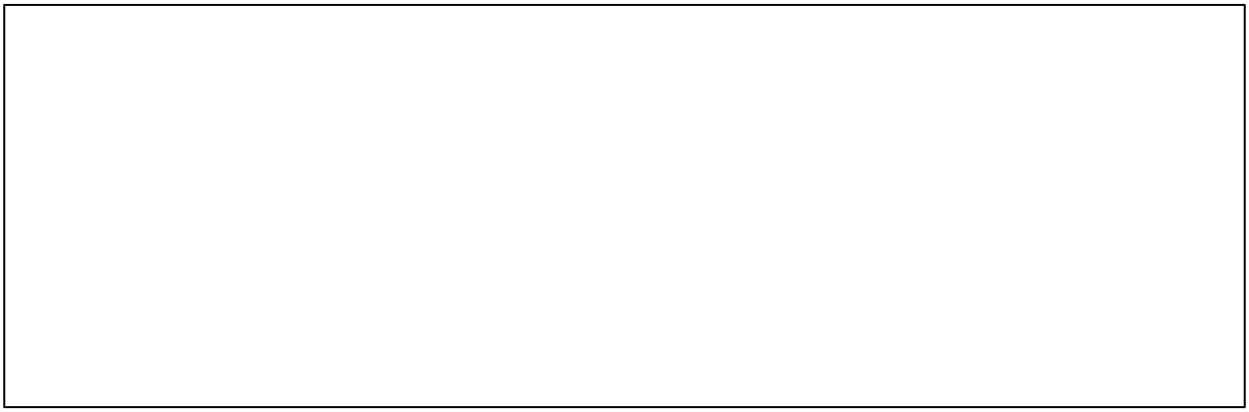

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1	4H-		2015	77.0		A
2	SOFC		2015	24.6		A
3			2015	80.0		A
4	SOFC		2015	67.0		A
5			2015	25.0		A
6			2015	35.0		A

7	Mo2C 1,3-		2016	20.0		A
8			2016	19.54		A
9	(21773007)		2017	65.0		A

1 863 973
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1	******		2015	100.0	863.0	A
2	*********		2015	25.0	863.0	A
3			2016	50.0		A
4	“ ”		2016	20.0		A
5			2016	6.0		A
6	“ ”		2016	1.5		A

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2 A B A B
3 A
4 2014
300 2015 2014 300

	intermediate temperature solid oxide fuel cells	Wang, David Rooney, Kening Sun*		Sources		
5	Ultrastrong Polyoxyzole Nanofiber Membranes for Dendrite-Proof and Heat-Resistant Battery Separators	Xiaoming Hao Jian Zhu,? Xiong Jiang Haitao Wu, Jinshuo Qiao, Wang Sun, Zhenhua Wang*	2016	Nano letter		13.8
6	The Ca element effect on the enhancement performance of Sr2Fe1.5Mo0.506-delta perovskite as cathode for intermediate-temperature solid oxide fuel cells	Jinshuo Qiao , Wenjun Chen, Wenyi Wang , Zhenhua Wang , Wang Sun	2016	Journal of power source		6.4
7	Flexible carbon nanofiber/polyvinylidene fluoride composite membranes as interlayers in high-performance Lithium-Sulfur batteries	Zhenhua Wang Jing Zhang , Yuxiang Yang, Xinyang Yue, Xiaoming Hao	2016	Journal of power source		6.4
8	Covalently functionalized TiO2 with ionic liquid: A high-performance catalyst for photoelectrochemical water oxidation	Lin Jing, Min Wang, Xinyuan Li, Ruoyun Xiao, Yufei Zhao, Yuxia Zhang , Yi-Ming Yan, Qin Wu, Kening Sun	2015	Applied Catalysis B: Environmental		9.4

9	A bulky and flexible electrocatalyst for efficient hydrogen evolution based on the growth of MoS2 nanoparticles on carbon nanofiber foam	Xin Guo, Guo-lin Cao, Fei Ding, Xinyuan Li, Shuyu Zhen, Yi-fei Xue, Yi-ming Yan, Ting Liu, Ke-ning Sun	2015	Journal of Materials Chemistry A		8.9
10	Diethylenetriamine (DETA)-assisted anchoring of Co3O4 nanorods on carbon nanotubes as efficient electrocatalysts for the oxygen evolution reaction	Yu-Xia Zhang, Xin Guo, Xue Zhai, Yi-Ming Yan, Ke-Ning Sun	2015	Journal of Materials Chemistry A		8.9

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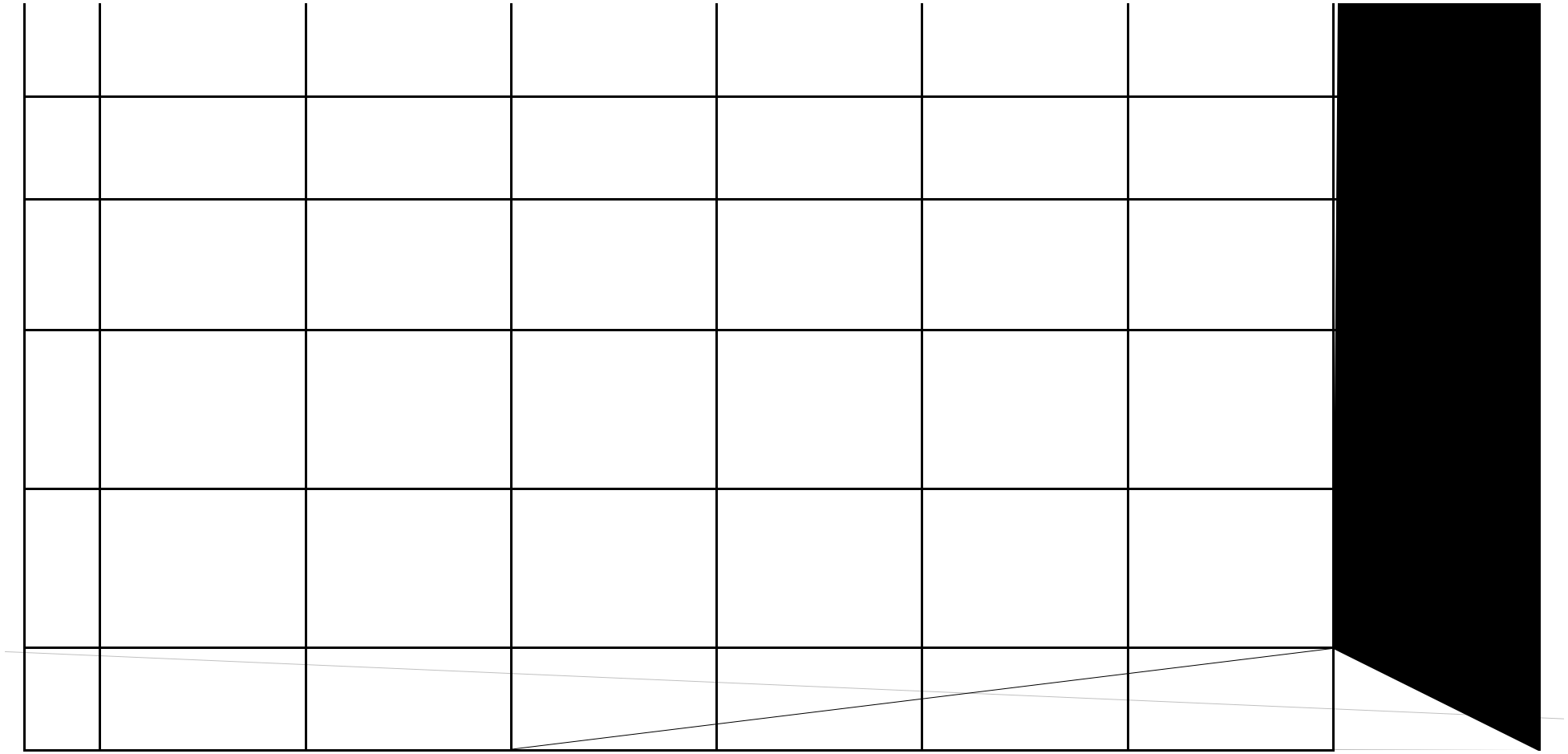
1		2.01510379299E11		2017			
2		ZL201720248171.5		2017			
3		2.017112887081E12		2017			
4		2.01711285931E12		2017			
5		201711285919X		2017			
6		2.017110136158E12		2017			
7		2.017110093148E12		2017			



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17		201610244227.X		2016			
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21		ZL201410286215 .4		2016			
22		2.013105410027 E11		2015			
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17			1988-01-11							
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19	David Rooney		1972-08-01							2016-6
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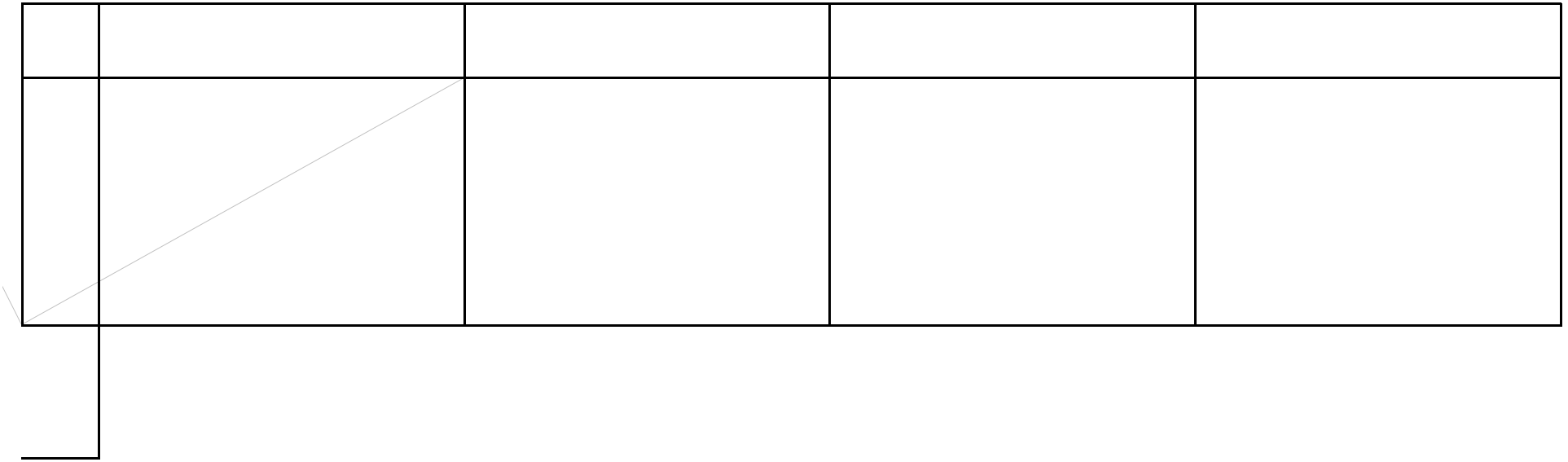

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2			University of California, Daxis	2017 11 -2018 11

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