Icy Moon Penetrator Organic Analyzer (IMPOA)

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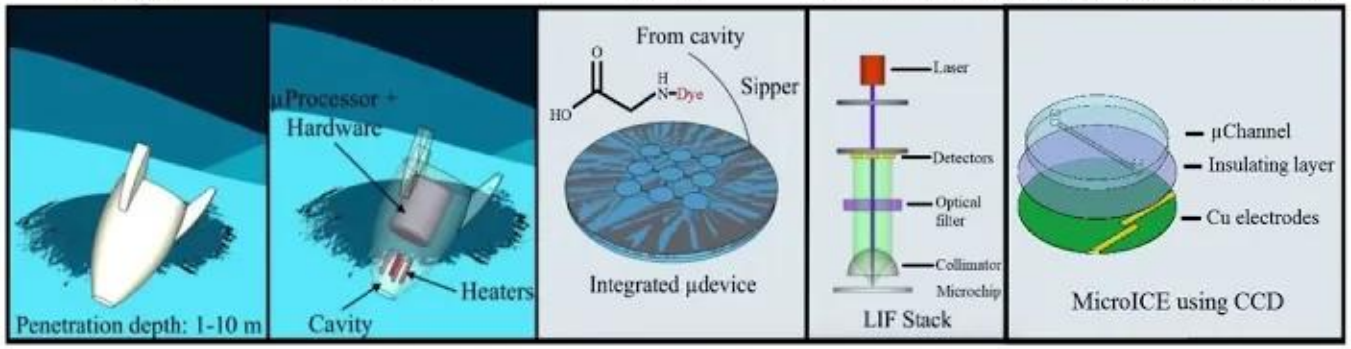
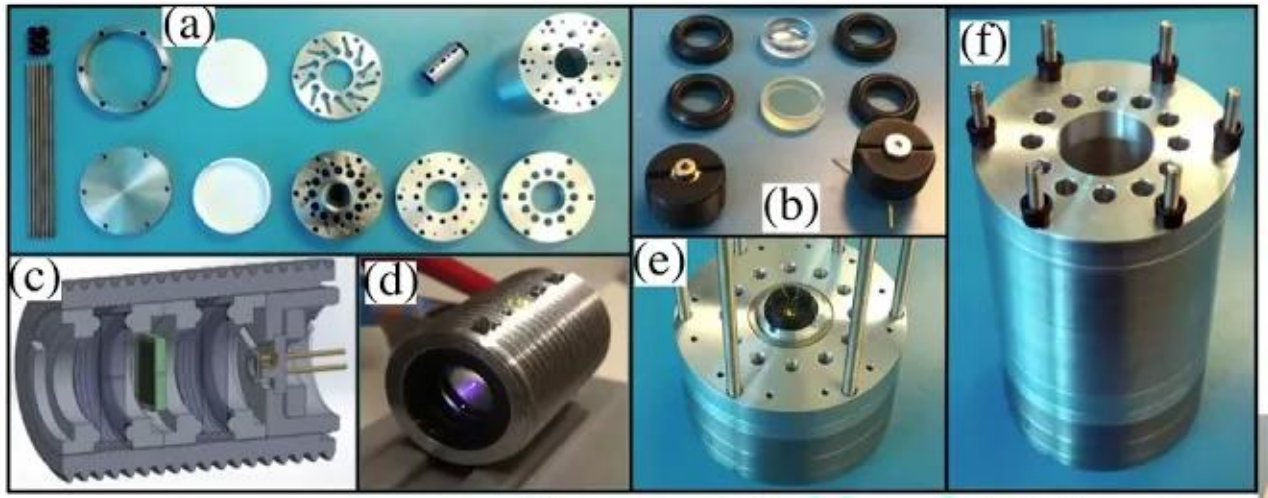
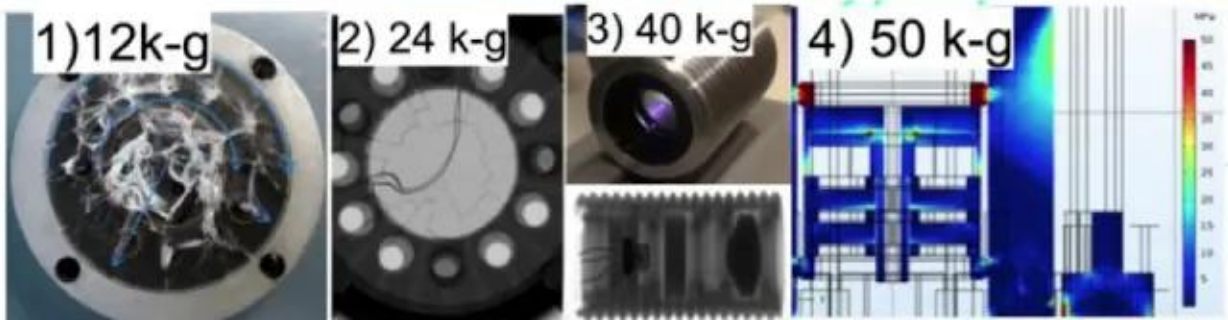
1. Impact
2. Collect
3. Label
4. LIF detection and Capacitively Coupled Detection

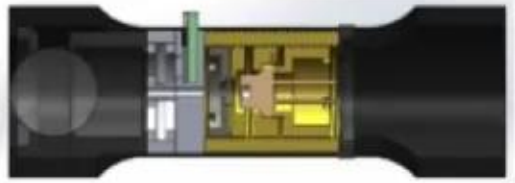


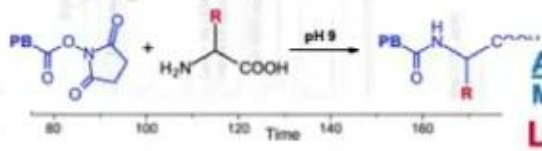




Amines and Amino Acids:
Rio Tinto

LOD 75 pM



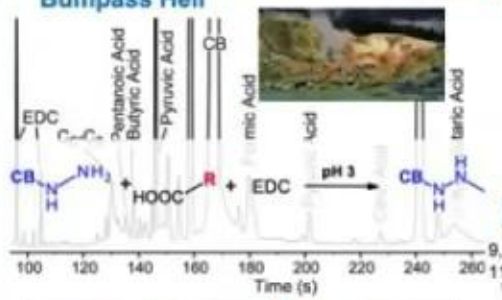


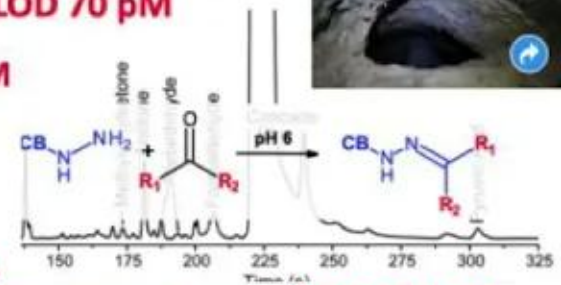
Aldehydes and Ketones:
Mojave Desert

LOD 70 pM

Carboxylic Acids:
Bumpass Hell

LOD 70 pM





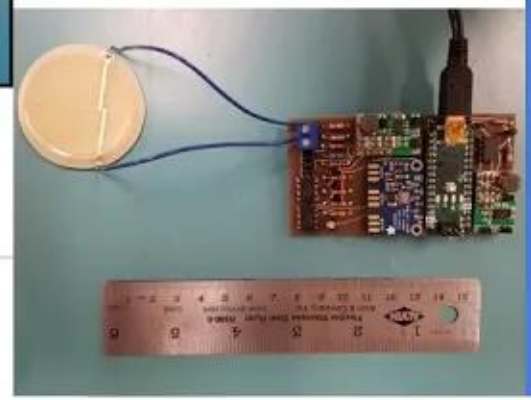
PAHs: Atacama Desert

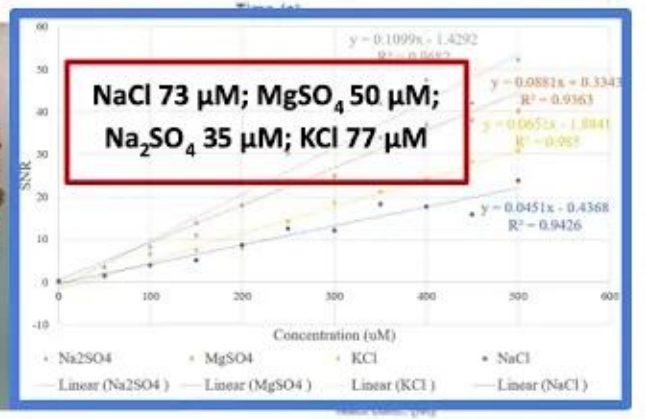
LOD 260 pM

9,10-diphenylanthracene
11.9 +/- 0.5 nM, 390 +/- 20 ppb

Pentacene

Perylene
1 nM, 50 +/- 30 ppb





1
00:00:03,750 --> 00:00:02,070
hi i'm chiang mai i'm from georgia tech

2
00:00:06,309 --> 00:00:03,760
and today very briefly i'm going to tell

3
00:00:07,749 --> 00:00:06,319
you about what i'm working on

4
00:00:10,230 --> 00:00:07,759
we're working on

5
00:00:12,150 --> 00:00:10,240
the ic moon penetrator organic analyzer

6
00:00:14,390 --> 00:00:12,160
as the name itself implies it's not

7
00:00:16,390 --> 00:00:14,400
designed for soft landing it's designed

8
00:00:18,310 --> 00:00:16,400
for impacting and penetrating the ice

9
00:00:20,870 --> 00:00:18,320
crust and once it impacts it could

10
00:00:22,950 --> 00:00:20,880
collect the ice and melt it and route it

11
00:00:24,950 --> 00:00:22,960
into an integrated micro device for

12
00:00:26,790 --> 00:00:24,960
further analysis in this case laser

13
00:00:28,870 --> 00:00:26,800

induced fluorescence and capacitively

14
00:00:31,189 --> 00:00:28,880
coupled contact with detection it's a

15
00:00:33,190 --> 00:00:31,199
cocaine-sized device housing all these

16
00:00:35,030 --> 00:00:33,200
individual components together

17
00:00:37,430 --> 00:00:35,040
we have impact tested them at various

18
00:00:39,190 --> 00:00:37,440
velocities the fourth model shows that

19
00:00:41,350 --> 00:00:39,200
all components are going to survive the

20
00:00:43,270 --> 00:00:41,360
impact the lif system that we've

21
00:00:45,350 --> 00:00:43,280
constructed demonstrates picomolar

22
00:00:47,110 --> 00:00:45,360
limits of detection which meets the nasa

23
00:00:49,430 --> 00:00:47,120
requested limits of detection for

24
00:00:51,110 --> 00:00:49,440
organics and for inorganics we have

25
00:00:53,189 --> 00:00:51,120
demonstrated micromolar limits of

26
00:00:55,189 --> 00:00:53,199
detection which exceeds the requirement

27
00:00:57,189 --> 00:00:55,199
by four orders of magnitude if you would

28
00:00:59,430 --> 00:00:57,199
like to check more about this work