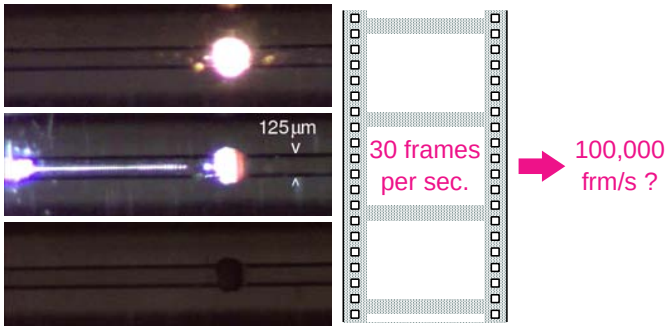
In-situ Observation of Fiber Fuse Ignition

Shin-ichi TODOROKI (Шинъичи Риичевич Тодороки)

Advanced Materials Lab. / NIMS Japan

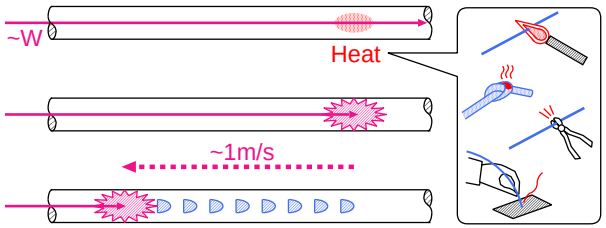


Slide 1

Introduction — Fiber fuse

- Found in 1987
  (R.Kashyap & K.J.Blow)
- Optical discharge runs toward the light source leaving periodic voids

Video



Slide 2

OVERVIEW

In-situ observation of fiber-fuse ignition

Videography

How was the moment captured?

The moment

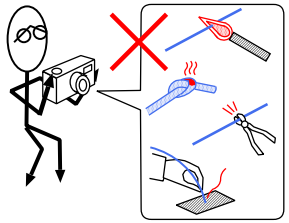
How did the discharge appeared?

Additional facts

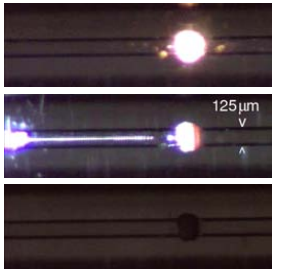
Does it the only mode of ignition?

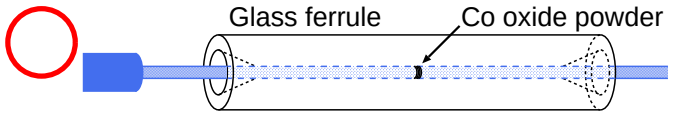
Slide 3

Videography — to capture the ignition



1480nm
9W



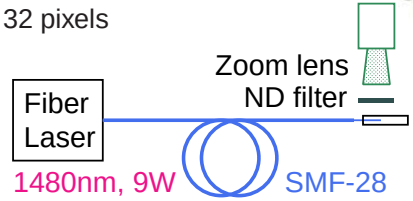


Slide 4

Videography

Shooting condition

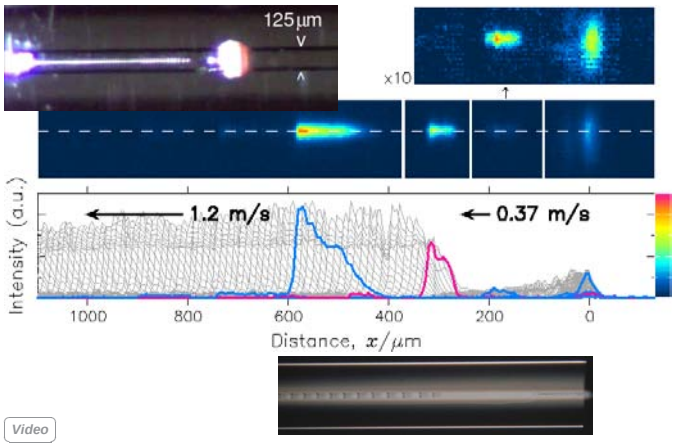
- 10μs/frame
- 1μs-exposure with ND filters ($\times$16)
- 256$\times$32 pixels



Slide 5

The moment

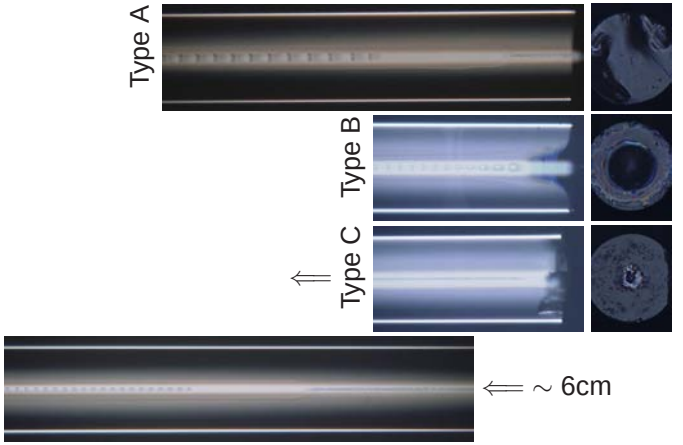
Trajectory of the radiant



Slide 6

Additional facts

Photographs of damaged tails



⟸ ∼ 6cm

Slide 7

SUMMARY

In-situ observation of fiber-fuse ignition

Videography

*Ignited **in a glass ferrule**. Captured every 10μs.*

The moment

*From **a slow & dark radiant** at ∼0.3mm from the edge.*

Additional facts

*Must be **other modes of ignition** to be investigated.*

Slide 8

Acknowledgement

- Mr. Kazuhide HANAKA & Mr. Akira SAKAMAKI 

- Dr. Satoru INOUE 

Announcement

Tomorrow 14:30 at Hall 6
Symposium on
Optical Discharge Propagation in Fiber Waveguides

Slide 9