



**AARUPADAI VEEDU
INSTITUTE OF TECHNOLOGY**
OMR, PAIYANOR, CHENNAI - 603104



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AVIT

DEPARTMENT OF MECHANICAL ENGINEERING

INDIAN INSTITUTION OF PRODUCTION ENGINEERS (IIPrE)

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Report – Webinar on Micromachining - Technology for Future

20th October 2020

Resource person: Dr.S.Kanmani Subbu,

Student chapter of Indian Institution of Production Engineers (IIPrE) of AVIT conducted a webinar on the topic **“Micromachining - Technology for Future”** on **20th October 2020** by **Dr.S.Kanmani Subbu**, Assistant Professor, Department of Mechanical Engineering, IIT, Paalakkad, Kerala was welcomed by **Prof.L.PRABHU** vice principal –Admin & HOD Mechanical Engineering . A brief introduction about chief guest is given by G Antony Casmir, Assistant Professor, Department of Mechanical Engineering, AVIT.

The topics covered in seminar

- Introduction about Micromachining- Additive & subtractive Process
- Different technologies Used in Micromachining
- Briefly explained the topics Miniaturization - Advantage & Disadvantages.
- Explanation Drive Miniaturization.
- Uses medical applications, automobiles etc.

Seminar Outcome

- Students understood the importance of micromachining – Non traditional process
- To know upcoming trends in industries about micro and Nano Scale.
- Learned about Non traditional machining revolution in past years.

Students Suggestion

- To arrange regular guest lecturer and industrial visit.

The Webinar was organised by Mr.J. Senthil, Associate Professor, & Mr. G.Antony Casmir Asst. Prof/mech, and vote of thanks conveyed to the Management, Chief Guest, and VP-Admin for successful completing the webinar.

Classification of Micro-manufacturing Processes

Subtractive processes

- ❑ Micro Mechanical Machining (Turning, Drilling, Milling, Grinding)
- ❑ Micro Electro Discharge Machining (EDM)
- ❑ Micro Electro Chemical Machining (ECM)
- ❑ Micro Machining with Laser, FIB

Additive processes

- ❑ Micro Selective Laser Sintering (SLS)
- ❑ Micro Stereolithography (SLA)
- ❑ Micro Ink-jet Printing, etc

Subtractive Processes: Mechanical

Process Types

- ❑ Micro Turning
- ❑ Micro Drilling
- ❑ Micro Milling
- ❑ Micro Grinding

Advantages

- ⦿ Good geometric correlation between tool path and machined surface
- ⦿ Higher Material Removal Rate (MRR)
- ⦿ Wide range of work materials
- ⦿ 3-D machining

Characteristics

- ❑ Tools harder than workpiece
- ❑ Tools in mechanical contact with workpiece
- ❑ Downscaled version of conventional machining


Limitations

- ❑ No mass production
- ❑ High machining force

Recording

Drive for Miniaturization

Many industries are requiring the manufacture of miniature components and/or miniature features



Length scales: ~5000 µm length, ~120 µm diameter, ~100 µm width. **Tolerances:** ~ 1 µm

Materials: Stainless steel, Aluminum, Brass, Titanium (often with complex 3-D features)

Manufacturing Processes: Mechanical machining, EDM, Laser Machining, Lithography, Etc.

10:03 AM 94%

Zoom



Senthil J



PRABHU L

Raise Hand Chat Q&A More

DR.S.KANMANI SUBBU, ASSISTANT PROFESSOR, DEPARTMENT OF MECHANICAL ENGINEERING, IIT, PAALAKKAD, KERALA