



Evaluation

Mechanical Micromanufacturing

Sébastien Thibaud

sebastien.thibaud@ens2m.fr



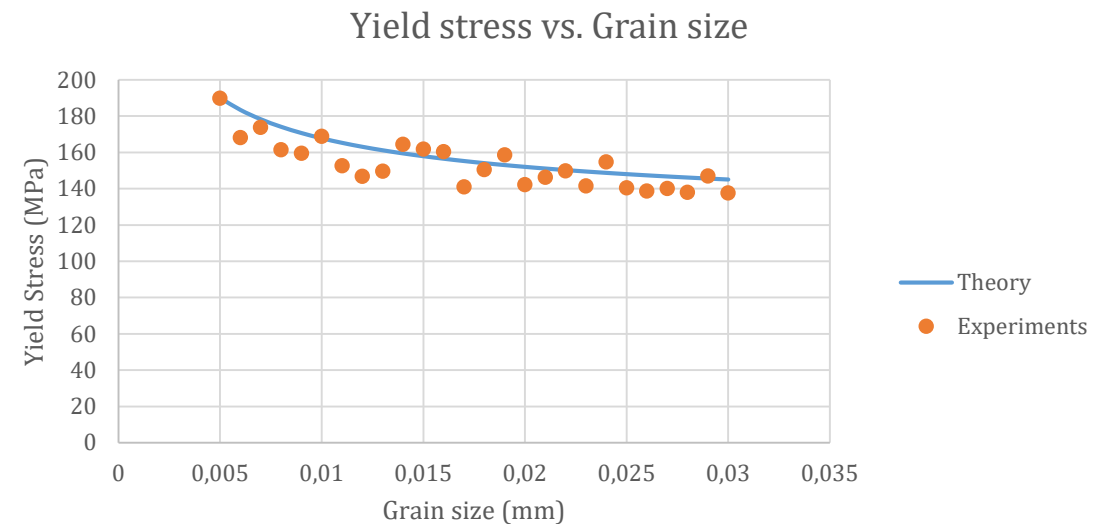
HIM Program – Doctoral Program

Questions

#1 : Tensile tests are performed with aluminum alloy strips. An annealed process is applied on some specimens. The initial grain size is equal to $d_0=30\mu\text{m}$ and the current grain size is equal to $d_c=5\mu\text{m}$ after annealed process.

By considering the yield stress evolution in relation with the grain size

1. Which theoretical law follows the evolution of the elastic limit as a function of grain size?
2. What is the theoretical value of the grain size to be used to obtain a yield stress equal to 160 MPa?



Questions

#2 : We consider the following watch component.

The material used is Sapphire.

Is it possible to use μ Electrical-Discharge Machining process ? Why ?



#3 Which phenomena should be studied as a priority when miniaturizing a manufacturing process ?

#4 Is it true that the material behavior has no influence on manufacturing processes used at the micro-scale ? Why ?



Highlights in MicroEngineering

Thank you for your attention

Sébastien Thibaud

sebastien.thibaud@ens2m.fr