

Cooled Ablation

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1 Introduction

- What is laser ablation ?
- Principles of cooled laser ablation

2 MatLab simulation

- Choices of programming
- Results

3 Application of this ablation : medical ablation

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Introduction

MatLab simulation

Application of this ablation : medical ablation

Conclusion

Thanks

What is laser ablation ?

Principles of cooled laser ablation

Ablation after m pulses

$$T_c < T_{material} = T_0 + \Delta T + \frac{\Delta T}{\sqrt{1 + \frac{\tau_R}{\tau_0}}} + \frac{\Delta T}{\sqrt{1 + \frac{\tau_R}{\tau_0}}} + \dots$$

Ablation after m pulses

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$$\Leftrightarrow T_C = T_0 + \Delta T + (m - 1) \frac{\Delta T}{\sqrt{1 + \frac{\tau_R}{\tau_0}}}$$

Ablation after m pulses

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$$\Leftrightarrow T_c = T_0 + \Delta T + (m-1) \delta T$$

$$\Leftrightarrow m-1 = \frac{T_c - T_0 - \Delta T}{\delta T}$$

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$$\Leftrightarrow T_c = T_0 + \Delta T + (m-1)\delta T$$

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$$\Leftrightarrow \boxed{m = \frac{T_c - T_0 - \Delta T + \delta T}{\delta T}}$$

(1)

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Negative aspects

- MatLab is, sometimes, a "black box",
- It is not a free software.

Evolution of the temperature of the material at the impact point

Evolution of the temperature of the material in the bulk

Thank you for your attention