Lection 9

Thermal conduction theory application to technology processes modeling

The content of this lection is changed yearly.

The examples of the problems that are discussed during the lection:

1. Particle heating in the low temperature plasma.
2. Temperature redistribution between the particle and matrix during electron beam heating.
3. Laser irradiation action on the metals taking into account the optical properties dependence on temperature
4. Laser cutting of polymer film taking into account properties change due to chemical conversions
5. The problem on deep melting using electron beam or laser irradiation
6. Models electron beam or/and ion beam mixing
7. Moving heat source at the welding and surfacing
8. Surface treatment using modified particles and electron beam
9. Thermal treatment of material with coating by energy flux (there are many variants)
10. The problems on oxygen and combined cutting
11. Technology models when electro heating is used
12. The material heating in magnetic field
13. Material conjugation using solid-phase combustion
14. Coating deposition taking into account the shrinkage
15. Coating synthesis on the substrate using high energy sources
16. Electron beam treatment of heterogeneous material
18. Ion beam modification of surfaces and coatings
19. Isothermal diffusion annealing
20. Diffusion soldering
21. Burning in fluidized bed
22. Gas burning in porous burner
23. Welding using melting electrode.
24. Models of electroslag hard-facing
25. Coating deposition from plasma