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Mathematical modeling of temperature fields in two-layer heat absorbers for the development of robotic technology for microplasma spraying of biocompatible coatings(Conference Paper)

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Краткое описание Просмотр пристатейных ссылок (14)

The motivation for the research was the challenges faced in developing the robotic microplasma spraying technology for applying coatings from biocompatible materials onto medical implants of complex shape. Our task is to provide microplasmatron movement according to the complex trajectory during the surface treatment by microplasma and to solve the problem of choosing the speed of the microplasmatron movement, so as not to cause melting of the coating. The aim of this work was to elaborate mathematical modeling of temperature fields in two-layer heat absorbers: coating-substrate depending on the velocity of microplasmatron with a constant power density. A mathematical model has been developed for the distribution of temperature in two-layer absorbers when heated by a moving source and the heat equation with nonlinear coefficients has been solved by numerical methods. © Springer Nature Switzerland AG 2019.