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Development and application of laser cladding modeling technique: from coaxial powder feeding up to the surface deposition and bead formation

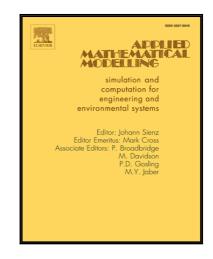
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Highlights

- New technique of 3D numerical modeling of coaxial laser cladding is constructed.
- Collision of particles with nozzle wall exerts the determining influence on a powder stream profile and bead width.
- Analysis of powder utilization rate and resulting bead profiles by varying distance from nozzle are carried out.
- The position of the particle flux focal region in the control range of laser cladding is calculated.
- A numerical simulation can predict the optimal strategy for laser cladding a continuous coating.



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