

1. Record Nr.	UNINA9911006694803321
Titolo	Cold spray technology // Anatolii Papyrin ... [et al.]
Pubbl/distr/stampa	Amsterdam ; ; Boston ; ; London, : Elsevier, 2007
ISBN	1-280-70746-1 9786610707461 0-08-046548-X
Descrizione fisica	1 online resource (341 p.)
Altri autori (Persone)	PapyrinAnatolii
Disciplina	671.73
Soggetti	Spraying Metals - Finishing Dielectrics - Finishing Gas dynamics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Front Cover; Title Page; Copyright Page; Table of Contents; Preface; Chapter 1 Discovery of the Cold Spray Phenomenon and its Basic Features; 1.1 Supersonic Two-phase Flow around Bodies and Discovery of the Cold Spray Phenomenon; 1.1.1 Experimental setup and research techniques; 1.1.2 Structure of disturbances induced by reflected particles; 1.1.3 Interaction of a supersonic two-phase flow with the surface. Effect of coating formation; 1.2 Spraying with a Jet Incoming onto a Target; 1.2.1 Acceleration of particles in cold spray; 1.2.1.1 Diagnostic methods 1.2.1.2 Experimental measurement of particle velocity1.2.2 Description of the setup; 1.2.3 Interaction of individual particles with the surface; 1.2.4 Transition from erosion to coating formation process. Critical velocity; 1.2.5 Effect of jet temperature on the deposition efficiency; Symbol List; References; Chapter 2 High-velocity Interaction of Particles with the Substrate. Experiment and Modeling; 2.1 Deformation of Microparticles in a High-velocity Impact; 2.1.1 Experimental setup and materials; 2.1.2 Measurement technique; 2.1.3 Statistical processing 2.1.4 Results of microscopic studies2.1.5 Dependence of strain on

impact velocity; 2.2 Spraying of the Initial Layer and its Influence on the Coating Formation Process; 2.2.1 Activation of the surface by the particles. Induction time.; 2.2.2 Critical parameters; 2.2.3 Determination of the mass of the first coating layer; 2.2.4 Steady stage of coating formation; 2.2.5 Kinetics of coating-mass growth; 2.2.6 Deposition efficiency; 2.2.7 Correction to the deposition efficiency; 2.3 Modeling of Interaction of Single Particles with the Substrate within the Framework of Mechanics of Continuous Media  
 2.3.1 Impact of a spherical particle on a rigid substrate  
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 2.5.2.2 Results; 2.5.2.3 Numerical estimates; 2.5.3 Specific features of adhesive interaction of a non-melted particle with the substrate; 2.5.3.1 Governing equation for the number of bonds formed; 2.5.3.2 Heated volume; 2.5.3.3 Critical velocities; 2.5.3.4 Diagram of thermal states; 2.5.3.5 Volume of the material at the melting point; 2.5.3.6 Contact temperature; 2.5.3.7 Activation energy; 2.5.3.8 Adhesion energy; 2.5.3.9 Elastic energy; 2.5.3.10 Comparison of energies; 2.5.3.11 Adhesion probability; 2.5.3.12 Optimization problem; 2.5.3.13 Polydispersity  
 2.5.4 Effect of surface activation on the cold spray process

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## Sommario/riassunto

The topic of this book is Cold Spray technology. Cold Spray is a process of applying coatings by exposing a metallic or dielectric substrate to a high velocity (300 to 1200 m/s) jet of small (1 to 50  $\mu$ m) particles accelerated by a supersonic jet of compressed gas. This process is based on the selection of the combination of particle temperature, velocity, and size that allows spraying at the lowest temperature possible. In the Cold Spray process, powder particles are accelerated by the supersonic gas jet at a temperature that is always lower than the melting point of the material, resulting in

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