

3D 프린팅 공정 관점의 저온분사 기술
Cold spray technology as a potential additive manufacturing

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초 록: Cold spray (Cold gas dynamic spray, kinetic spray) is the latest spray coating process that is known as solid state deposition process. In cold spray, inert gases (typically nitrogen and helium) accelerate powder particles prior to impact onto the substrate. Accelerating particles start to deposit onto the substrate after reaching certain critical velocities depending on the coating materials and substrate. Since process gas temperatures are kept below to melting temperature of the coating materials, it is possible to spray temperature sensitive materials such as copper and titanium, nanocrystal materials, and amorphous metals without affecting the phase change and oxide formation. It is also possible to deposit thick coatings because cold spray coatings present compressive residual stresses. This ability to deposit thick coatings is suitable to repair or rebuild parts as an additive manufacturing process. In this presentation, cold spray is introduced and compared to other additive manufacturing processes such as laser and electron beam based processes. It is also presented some applications especially in the view point of additive manufacturing process.