1. Record Nr. UNINA9910896085803321

Titolo	Jahresbericht
Pubbl/distr/stampa	Berlin, : Umweltbundesamt
Descrizione fisica	1 online resource
Disciplina	354.430082/321/06
Soggetti	Milieubeleid Periodicals.
Lingua di pubblicazione	Tedesco
Formato	Materiale a stampa
Livello bibliografico	Periodico

2. Record Nr. UNINA9910407736803321

Titolo	Mechanics of Strain Gradient Materials / / edited by Albrecht Bertram, Samuel Forest
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2020
ISBN	3-030-43830-9
Edizione	[1st ed. 2020.]
Descrizione fisica	1 online resource (177 pages)
Collana	CISM International Centre for Mechanical Sciences, Courses and Lectures, , 0254-1971 ; ; 600
Disciplina	620.11292
Soggetti	Mechanics Mechanics, Applied Building materials Materials science Computer science - Mathematics Solid Mechanics Structural Materials Materials Science, general Computational Mathematics and Numerical Analysis
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa

Livello bibliografico	Monografia
Nota di contenuto	The Experimental Evidence for Higher Gradient Theories -- Balance Laws for Gradient Materials -- Strain Gradient Elasticity: From Capillarity to the Mechanics of Nano-Objects -- Microscopic interpretation of strain-gradient and generalized continuum models -- Strain Gradient Plasticity: Theory and Implementation -- Finite Gradient Elasticity and Plasticity.
Sommario/riassunto	Over the past 50 years, strain gradient material theories have been developed for the continuum modeling of size effects in materials and structures in terms of their elasticity, plasticity and fracturing. This book puts forward a unifying perspective to combine existing theories involving the higher order gradient of the strain tensor, or of plastic strain. It begins by reviewing experimental findings on the existence (or non-existence) of size effects on the mechanics of materials. In turn, the book devises first, second and higher order strain gradient theories from general principles, and presents constitutive frameworks that satisfy thermodynamic requirements. The special case of strain gradient plasticity is then developed and illustrated via computational analyses of size effects on the plasticity of metals at small scales. In closing, the book explains the origin of gradient effects in the case of lattice structures by drawing on homogenization theory.