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Volume 3 (2023)

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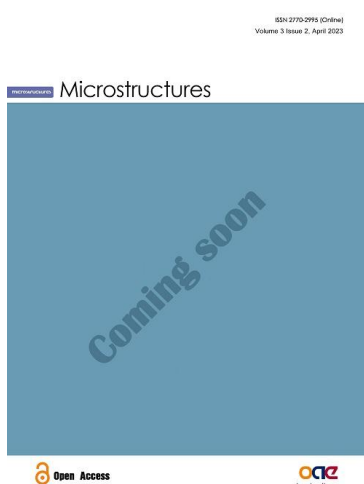
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Cover Picture

1. An ultraviolet-visible distinguishable broadband photodetector based on the positive and negative photoconductance effects of a graphene/ZnO quantum dot heterostructure

Xun Yang#, Chao-Jun Wang#, Shaobo Cheng, Xi-Gui Yang, Jin-Hao Zang, Chong-Xin Shan

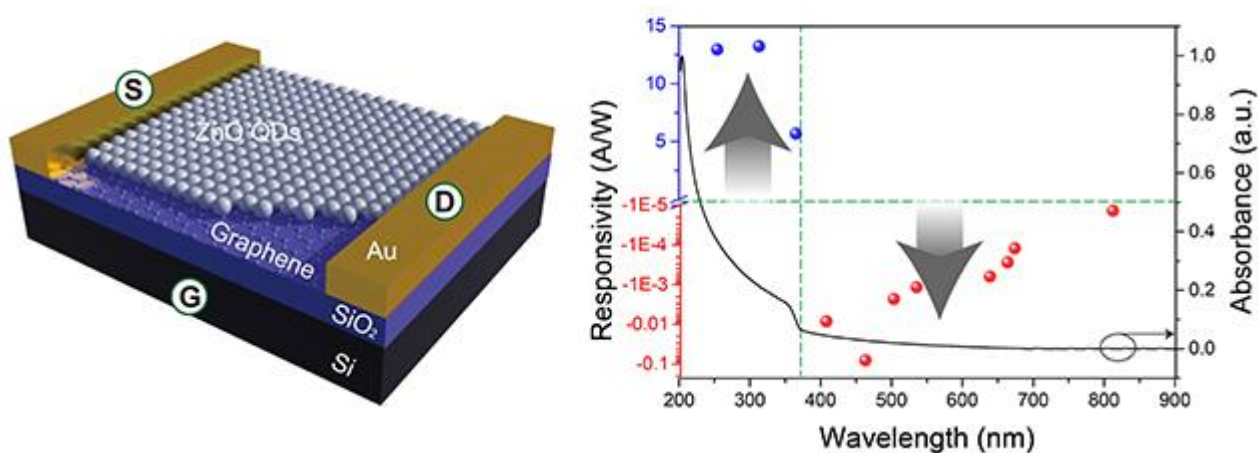
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Yang X, Wang CJ, Cheng S, Yang XG, Zang JH, Shan CX. An ultraviolet-visible distinguishable broadband photodetector based on the positive and negative photoconductance effects of a graphene/ZnO quantum dot heterostructure. *Microstructures* 2023;3:2023005.

<http://dx.doi.org/10.20517/microstructures.2022.24>

2. Microstructure evolution in laser powder bed fusion-built Fe-Mn-Si shape memory alloy

Michael Leo Dela Cruz¹, Vladislav Yakubov², Xiaopeng Li², Michael Ferry¹

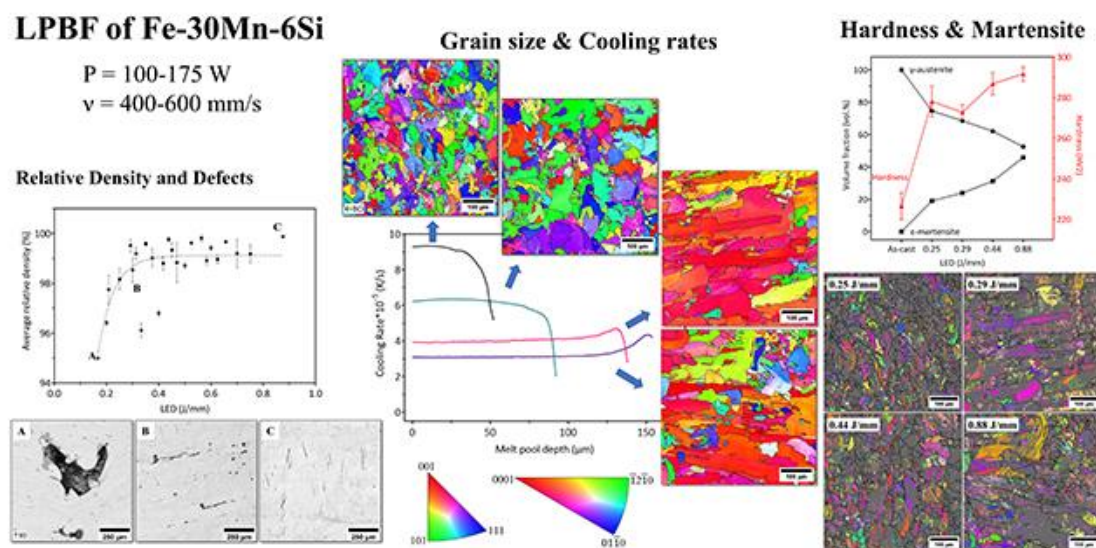
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Dela Cruz ML, Yakubov V, Li X, Ferry M. Microstructure evolution in laser powder bed fusion-built Fe-Mn-Si shape memory alloy. *Microstructures* 2023;3:2023012.

<http://dx.doi.org/10.20517/microstructures.2022.33>

Review

1. Environmental embrittlement behavior of high-entropy alloys

Bo Xiao^{1,2,3}, Shaofei Liu², Jianyang Zhang¹, Yinghao Zhou^{1,2}, Qian Li¹, Jinxiong Hou¹, Weicheng Xiao^{1,2}, Jixun Zhang¹, Yilu Zhao⁴, Chain Tsuan Liu^{1,3}, Lianrong Xu⁵, Tao Yang^{1,3}

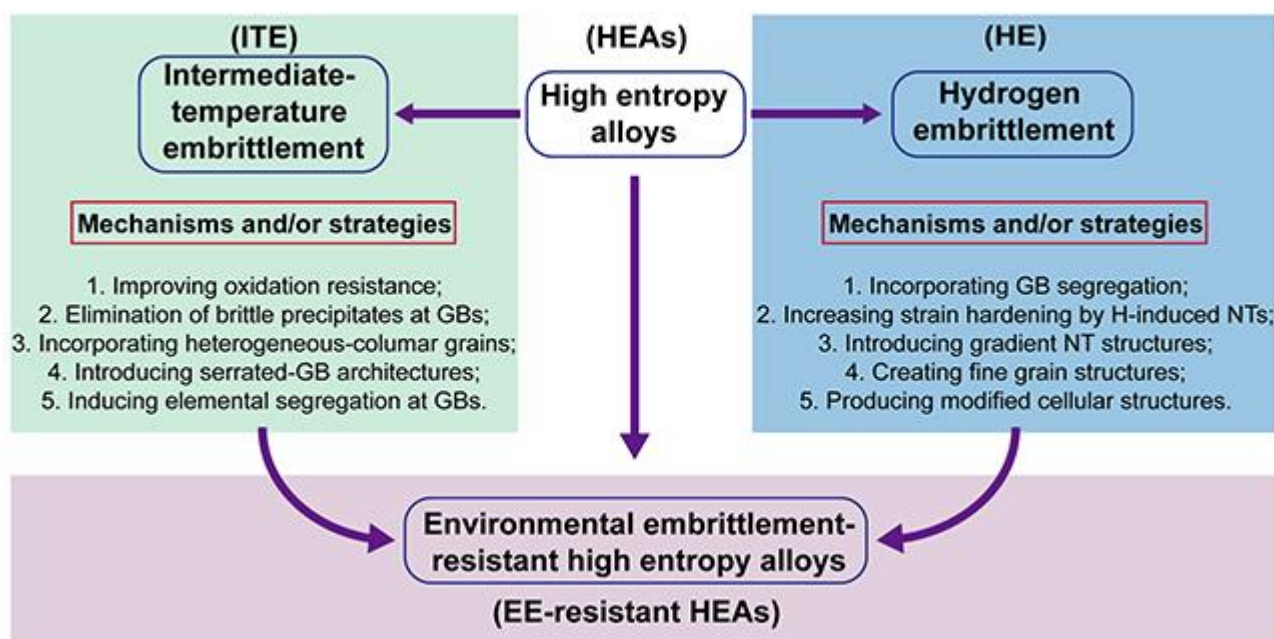
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Xiao B, Liu S, Zhang J, Zhou Y, Li Q, Hou J, Xiao W, Zhang J, Zhao Y, Liu CT, Xu L, Yang T.

Environmental embrittlement behavior of high-entropy alloys. *Microstructures* 2023;3:2023006.

<http://dx.doi.org/10.20517/microstructures.2022.26>

2. Modulation of photogenerated holes for enhanced photoelectrocatalytic performance

Naiyun Liu, Yixian Liu, Yunliang Liu, Yaxi Li, Yuanyuan Cheng, Haitao Li

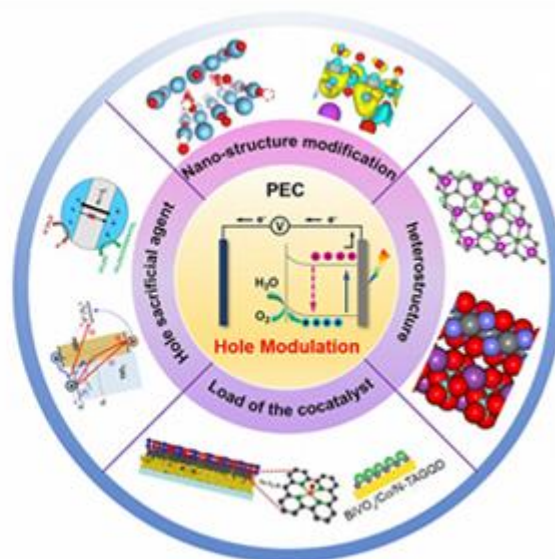
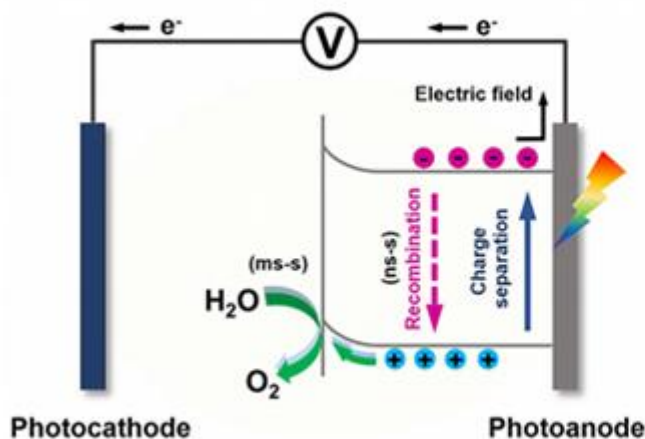
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3. Recent progress on alloy-based anode materials for potassium-ion batteries

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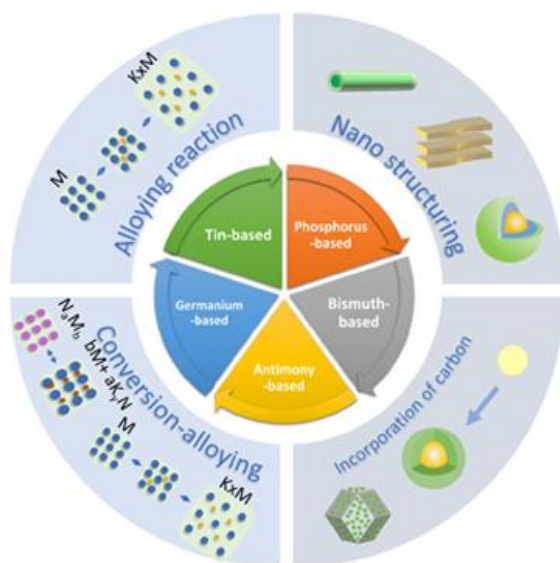
Qiuran Yang, Qining Fan, Jian Peng, Shulei Chou, Huakun Liu, Jiazhao Wang

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Yang Q, Fan Q, Peng J, Chou S, Liu H, Wang J. Recent progress on alloy-based anode materials for potassium-ion batteries. *Microstructures* 2023;3:2023013.

<http://dx.doi.org/10.20517/microstructures.2022.30>

Research Article

1. Trilayer PVDF nanocomposites with significantly enhanced energy density and energy efficiency using $0.55\text{Bi}0.5\text{Na}0.5\text{TiO}_3\text{-}0.45(\text{Sr}0.7\text{Bi}0.2)\text{TiO}_3$ nanofibers

Yuan Liu, Hang Luo, Haoran Xie, Zhida Xiao, Fan Wang, Xun Jiang, Xuefan Zhou, Dou Zhang

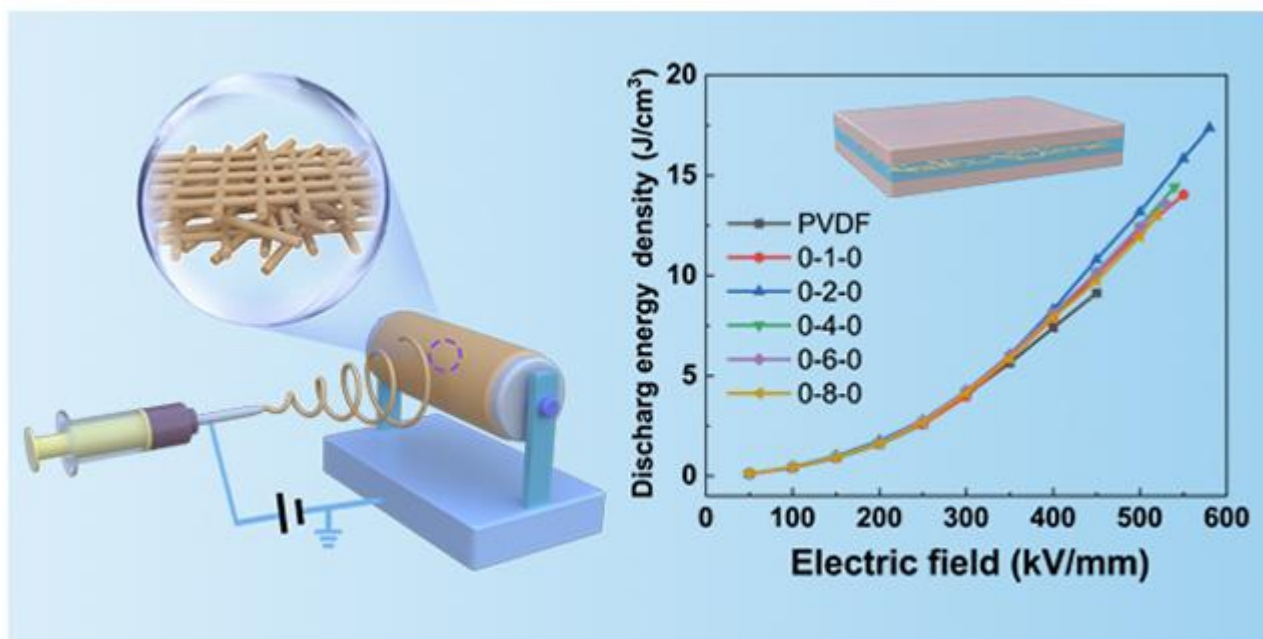
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Liu Y, Luo H, Xie H, Xiao Z, Wang F, Jiang X, Zhou X, Zhang D. Trilayer PVDF nanocomposites with significantly enhanced energy density and energy efficiency using $0.55\text{BiO} \cdot 0.5\text{NaO} \cdot 0.5\text{TiO}_3$ - $0.45(\text{SrO} \cdot 0.7\text{BiO} \cdot 0.2)\text{TiO}_3$ nanofibers. *Microstructures* 2023;3:2023008.

<http://dx.doi.org/10.20517/microstructures.2022.31>

2. The effect of chromium content on the corrosion behavior of ultrafine-grained $\text{Cr}_x\text{MnFeCoNi}$ high-entropy alloys in sulfuric acid solution

Tian Wan, Zhikun Huang, Zhuo Cheng, Mingyu Zhu, Weiwei Zhu, Zongyuan Li, Danni Fu, Fuzeng Ren

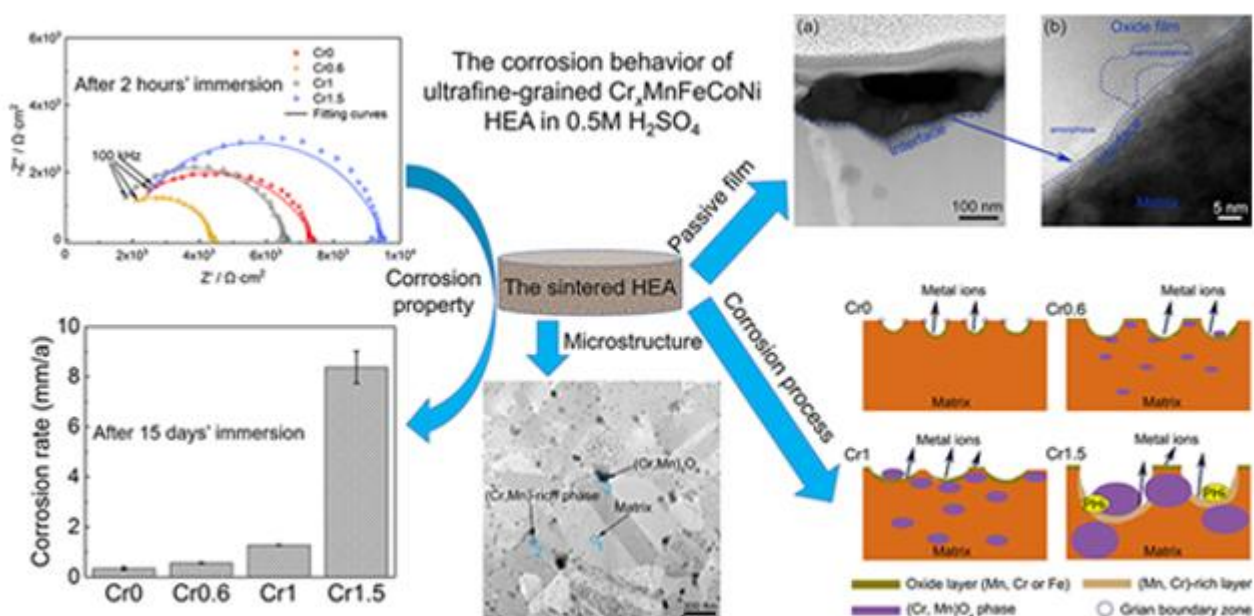
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Wan T, Huang Z, Cheng Z, Zhu M, Zhu W, Li Z, Fu D, Ren F. The effect of chromium content on the corrosion behavior of ultrafine-grained $\text{Cr}_x\text{MnFeCoNi}$ high-entropy alloys in sulfuric acid solution. *Microstructures* 2023;3:2023014.

<http://dx.doi.org/10.20517/microstructures.2022.36>

3. The influence of A/B-sites doping on antiferroelectricity of PZO energy storage films

Dongxu Li¹, Qinghu Guo², Minghe Cao¹, Zhonghua Yao^{1,2}, Hanxing Liu¹, Hua Hao^{1,2}

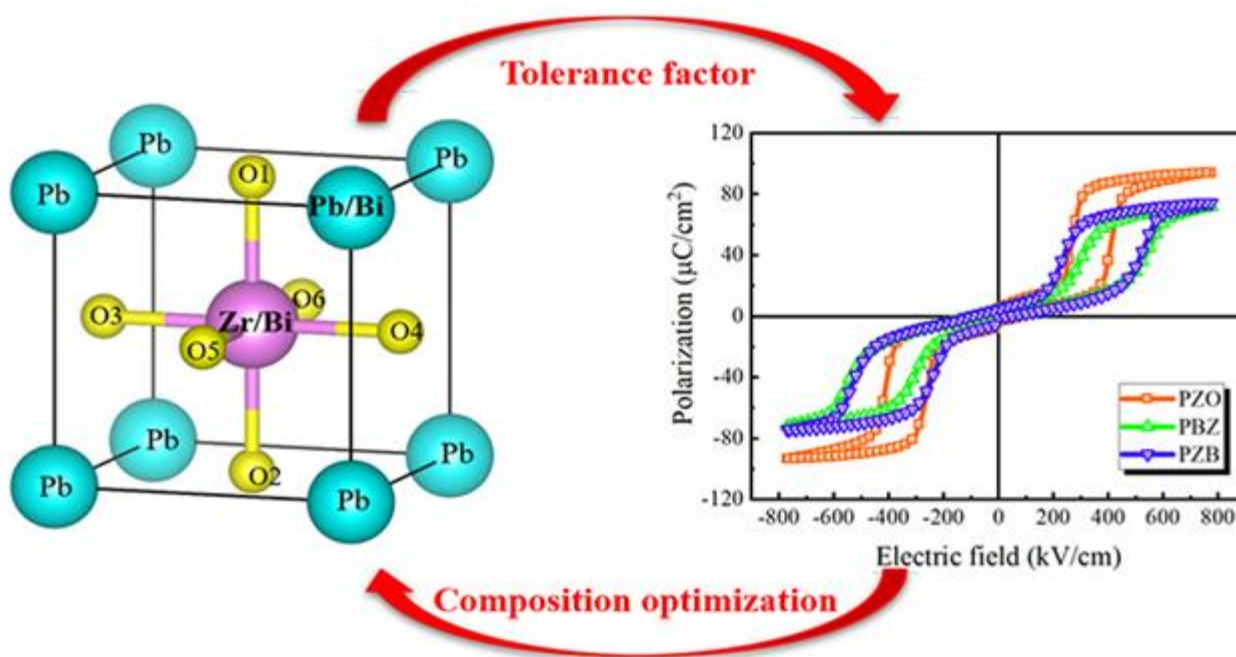
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Li D, Guo Q, Cao M, Yao Z, Liu H, Hao H. The influence of A/B-sites doping on antiferroelectricity of PZO energy storage films. *Microstructures* 2023;3:2023007.

<http://dx.doi.org/10.20517/microstructures.2022.27>

4. An ultraviolet-visible distinguishable broadband photodetector based on the positive and negative photoconductance effects of a graphene/ZnO quantum dot heterostructure

Xun Yang#, Chao-Jun Wang#, Shaobo Cheng, Xi-Gui Yang, Jin-Hao Zang, Chong-Xin Shan

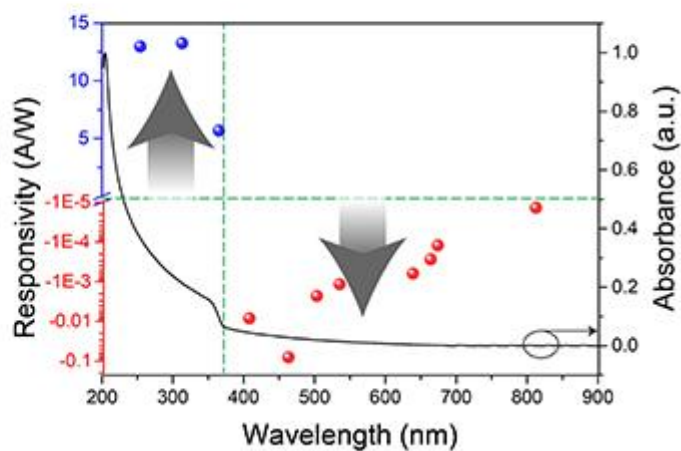
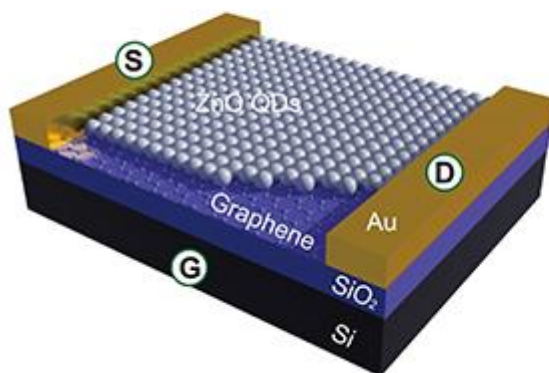
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<http://dx.doi.org/10.20517/microstructures.2022.24>

5. BaTiO₃-NaNbO₃ energy storage ceramics with an ultrafast charge-discharge rate and temperature-stable power density

Peiyao Zhao, Longtu Li, Xiaohui Wang

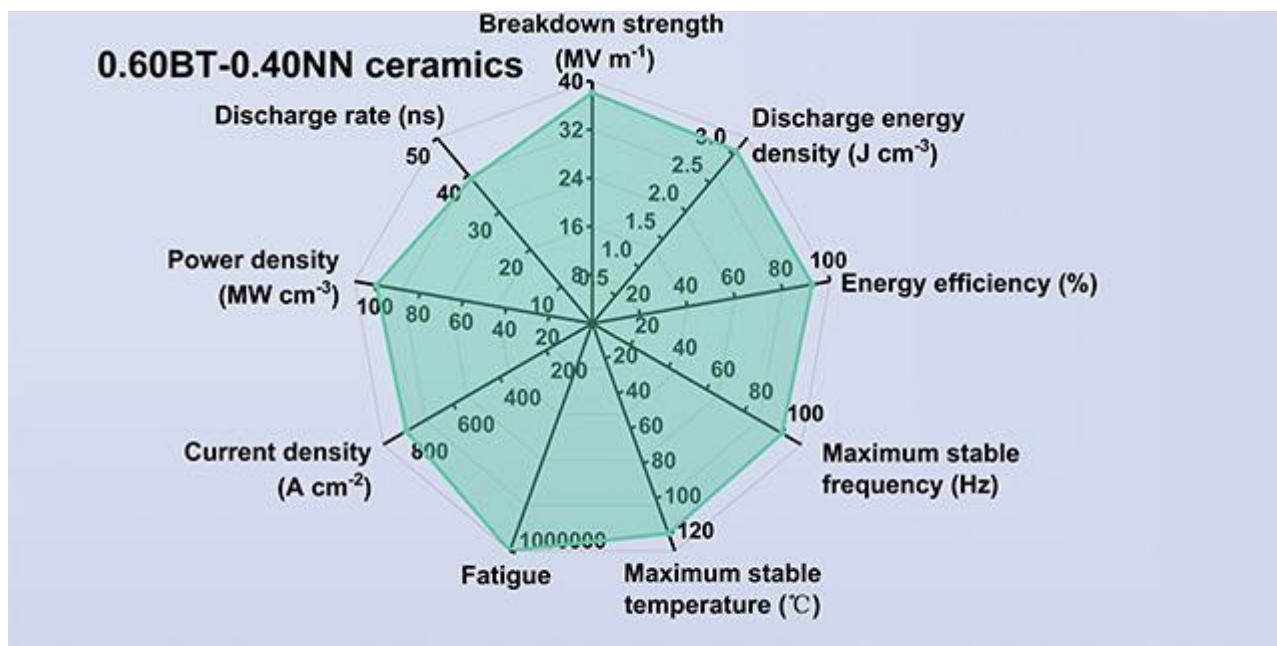
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Zhao P, Li L, Wang X. BaTiO₃-NaNbO₃ energy storage ceramics with an ultrafast charge-discharge rate and temperature-stable power density. *Microstructures* 2023;3:2023002.

<http://dx.doi.org/10.20517/microstructures.2022.21>

6. Microstructure evolution in laser powder bed fusion-built Fe-Mn-Si shape memory alloy

Michael Leo Dela Cruz¹, Vladislav Yakubov², Xiaopeng Li², Michael Ferry¹

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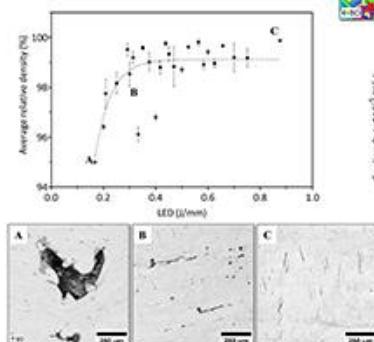
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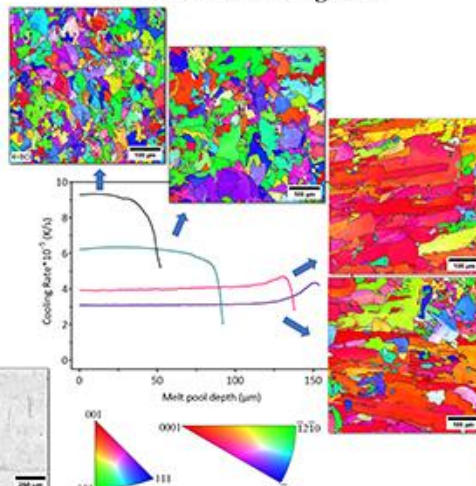
LPBF of Fe-30Mn-6Si

P = 100-175 W
v = 400-600 mm/s

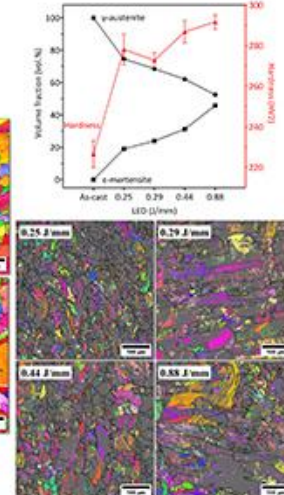
Relative Density and Defects



Grain size & Cooling rates



Hardness & Martensite



Cite this article

Dela Cruz ML, Yakubov V, Li X, Ferry M. Microstructure evolution in laser powder bed fusion-built Fe-Mn-Si shape memory alloy. *Microstructures* 2023;3:2023012.

<http://dx.doi.org/10.20517/microstructures.2022.33>

7. Triethanolamine assisted synthesis of bimetallic nickel cobalt nitride/nitrogen-doped carbon hollow nanoflowers for supercapacitor

Qiao Luo, Congcong Lu, Lingran Liu, Maiyong Zhu

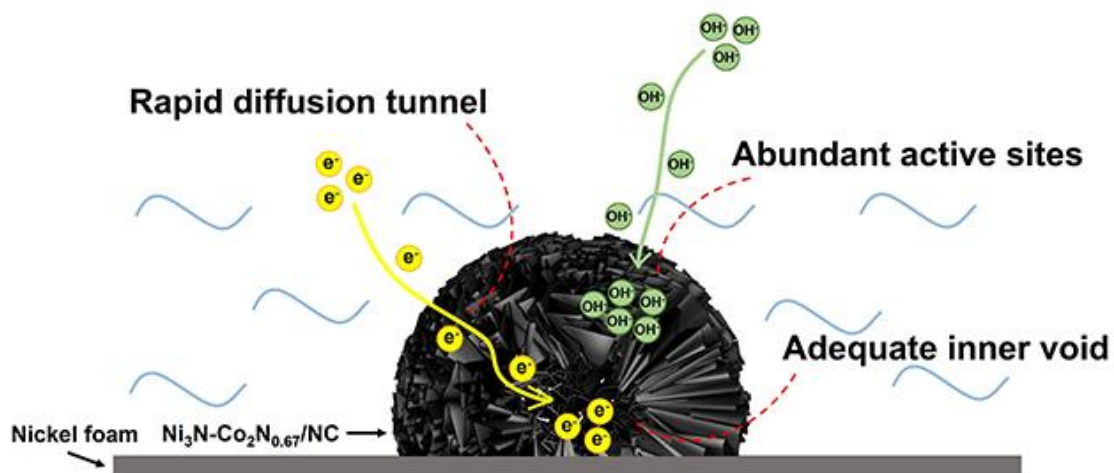
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Luo Q, Lu C, Liu L, Zhu M. Triethanolamine assisted synthesis of bimetallic nickel cobalt nitride/nitrogen-doped carbon hollow nanoflowers for supercapacitor. *Microstructures* 2023;3:2023011. <http://dx.doi.org/10.20517/microstructures.2022.41>

8. Elastic properties and Ion-mediated domain switching of self-assembled heterostructures

CuInP₂S₆-In₄/3P₂S₆

Xiangping Zhang^{1,#}, Xingan Jiang^{1,#}, Guoshuai Dui, Qi Ren¹, Wenfu Zhu¹, Jiaqian Kang¹, Yingzhuo Lun¹, Tingjun Wang¹, Bofang Bai¹, Zixuan Yui, Jianming Deng^{1,2}, Yabin Chen³, Xueyun Wang¹, Jiawang Hong¹

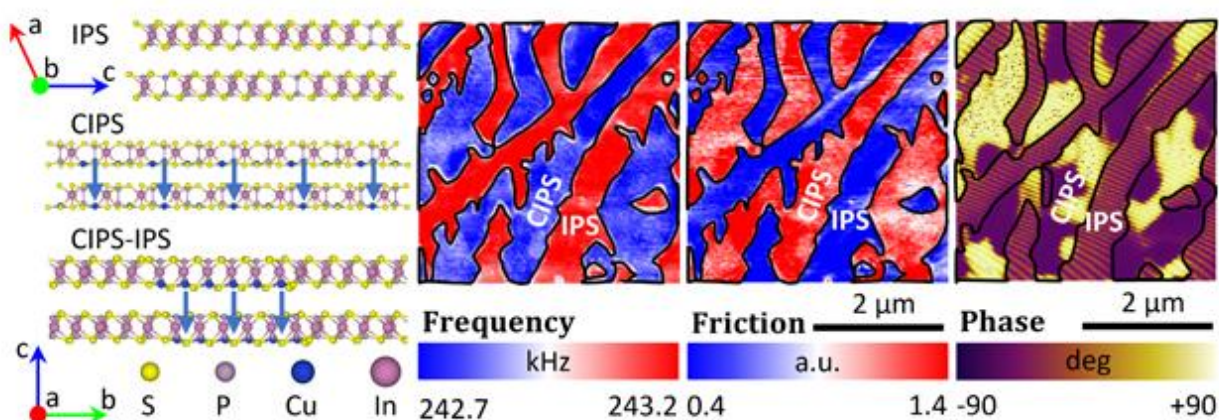
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Zhang X, Jiang X, Du G, Ren Q, Zhu W, Kang J, Lun Y, Wang T, Bai B, Yu Z, Deng J, Chen Y, Wang X, Hong J. Elastic properties and Ion-mediated domain switching of self-assembled heterostructures $\text{CuInP}_2\text{S}_6\text{-In}_{4/3}\text{P}_2\text{S}_6$. *Microstructures* 2023;3:2023010.

<http://dx.doi.org/10.20517/microstructures.2022.39>

9. Energy storage properties of NaNbO_3 -based lead-free superparaelectrics with large antiferrodistortion

Guanfu Liu, Liang Chen, He Qi

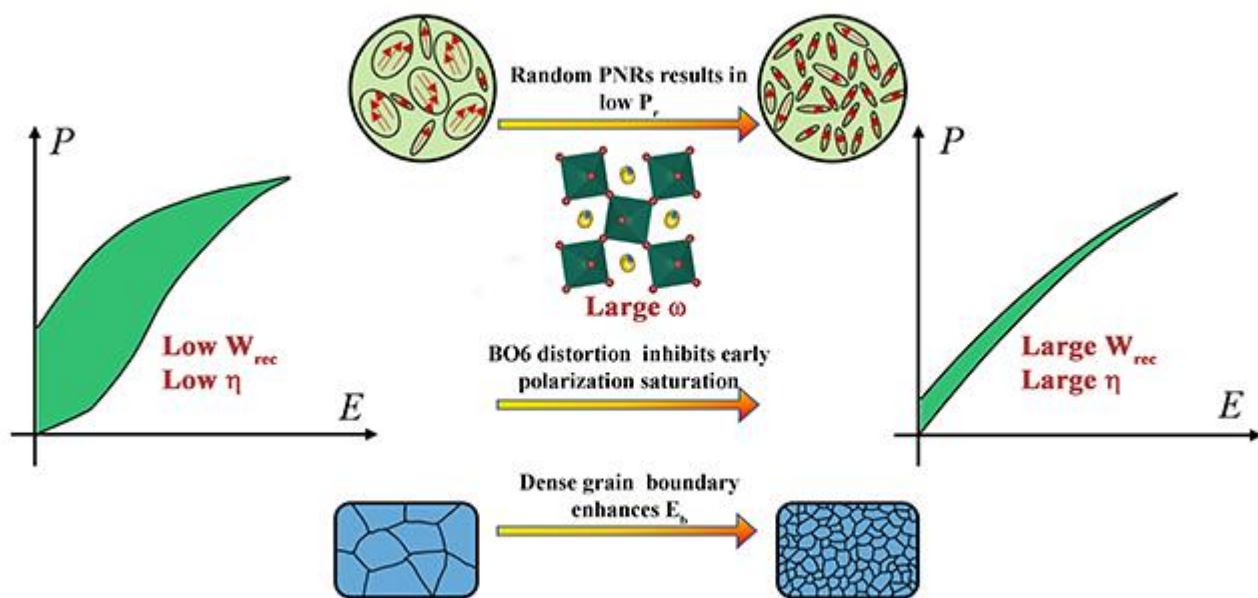
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Liu G, Chen L, Qi H. Energy storage properties of NaNbO₃-based lead-free superparaelectrics with large antiferrodistortion. *Microstructures* 2023;3:2023009.

<http://dx.doi.org/10.20517/microstructures.2022.29>

Technical Note

1. Nanostructural design of superstrong metallic materials by severe plastic deformation processing

Ruslan Z. Valiev

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Valiev RZ. Nanostructural design of superstrong metallic materials by severe plastic deformation

processing. *Microstructures* 2023;3:2023004.

<http://dx.doi.org/10.20517/microstructures.2022.25>

Commentary

1. High entropy design: a new pathway to promote the piezoelectricity and dielectric energy storage in perovskite oxides

Shujun Zhang

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Zhang S. High entropy design: a new pathway to promote the piezoelectricity and dielectric energy storage in perovskite oxides. *Microstructures* 2023;3:2023003.

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2. Commentary on “Heterogenous nature of enhanced piezoelectricity in relaxor-ferroelectric crystals”

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