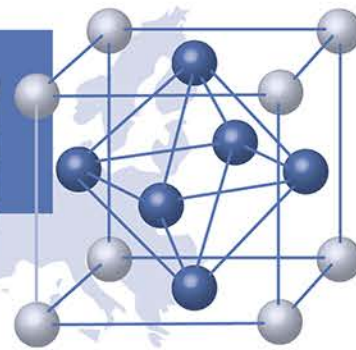


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ECAP and HPT combined effect on grain refinement of metallic materials

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**Salón de Actos de la Facultad de Ciencias
9 de Septiembre
16.30 horas**

“ECAP and HPT combined effect on grain refinement of metallic materials”

A detailed investigation was carried out to describe the microstructure grain refinement process, hardness evolution, and local elastic modulus response of pure nickel processed subjected to a combination of two severe plastic deformation (SPD) techniques: equal-channel angular pressing (ECAP) and high-pressure torsion (HPT). Microstructure inspections were carried out by TEM, while the mechanical evolution, i.e. the material hardness and local Young's modulus, was inferred by nanoindentation hardness measurements. It was found that the combination of ECAP + HPT allow an effective grain refinement, together with a consistent hardening of the pure nickel. Elastic modulus decreased considerable after ECAP + HPT. At the highest shear strain level, the grained structure, hardness and local elastic modulus tended to saturate and homogenize throughout the extension of the HPT disc.

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