IOP New Journal of Physics Best Papers 2008

March 25, 2009 (HP20). The Institute of Physics free-access "New Journal of Physics" (NJP, http://njp.org) announced the list of papers selected as best in 2008. That list can be found at http://herald.iop.org/NJPBestof2008/m350/crk/132364/link/2433. Among the selected papers are only two directly related to superconductivity: those by W. Lu *et al* 2008 *New J. Phys.* **10** 063026 (6pp) and by I. Guillamón *et al* 2008 *New J. Phys.* **10** 093005 (10pp). Below we reproduce abstracts of these two papers.

Paper1:

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Diamagnetic susceptibility measurements under high hydrostatic pressure (up to 1.03 GPa) were carried out on a newly discovered Fe-based superconductor $LaO_{1-x}F_xFeAs$ (x = 0.11). The transition temperature T_C, defined as a point at the maximum slope of superconducting transition, was enhanced almost linearly by hydrostatic pressure, yielding a dT_C/dP of about $1.2 KGPa^{-1}$. Differential diamagnetic susceptibility curves indicate that the underlying superconducting state is complicated. It is suggested that pressure plays an important role on pushing the low T_C superconducting phase toward the main (optimal) superconducting phase.

Paper 2:

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We present very low temperature scanning tunneling microscopy and spectroscopy (STM/S) measurements in W-based amorphous superconducting nanodeposits grown using a metal–organic precursor and a focused-ion beam. The superconducting gap closely follows s-wave Bardeen–Cooper–Schrieffer theory, and STS images under magnetic fields show a hexagonal vortex lattice whose orientation is related to features observed in the topography through STM. Our results demonstrate that the superconducting properties at the surface of these deposits are very homogeneous, down to atomic scale.