Electronic Supplementary Material (ESI) for Nanoscale.

Supplementary information

Nanostructuring few-layer graphene films by swift heavy ions for electronic application: tuning of electronic and transport properties

N.A. Nebogatikova, I.V. Antonova, S.V. Erohin, D.G. Kvashnin, A. Olejniczak, V.A. Volodin, A.V. Skuratov, A.V. Krasheninnikov, P.B. Sorokin, L.A. Chernozatonskii

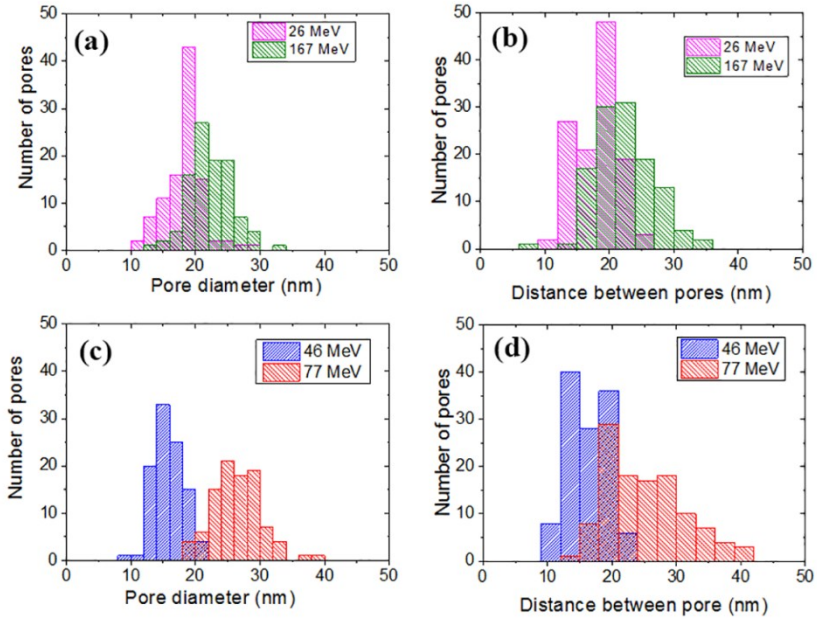

Fig. S1. Histograms of distributions of pores on size and distances between pores extracted from SEM images for samples irradiated with ion fluence of 3×10^{11} cm^{-2} and different energies. Comparison of the histograms demonstrates that parameters of pores for energies 26 and 46 MeV are very similar. The size of pores created by ions with energy 77 and 167 MeV and the distance between them are also closed one to another and slightly higher than that of the previous group of samples.

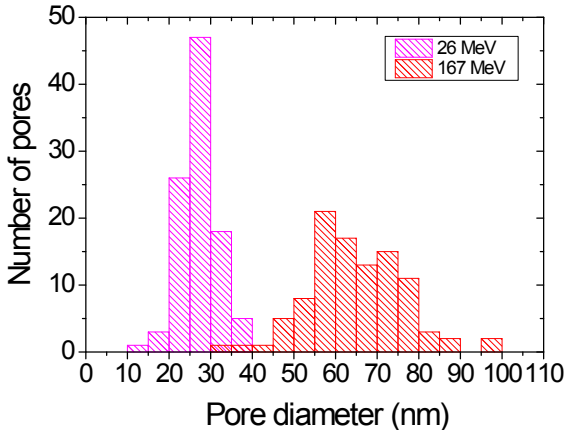

Fig. S2. Histograms of distributions of pores on size extracted from AFM images for samples irradiated with ion fluence of 3×10^{11} cm^{-2} and energies 26 and 167 MeV. Determination of the distance between pores in the case of AFM was hampered by large noises on the surface relief and ambiguity in the determination of this distance. This feature also can give higher values of pore size

than that extracted from SEM data. Difference between the size of pores in samples irradiated with 26 MeV and 167 MeV ions is looked more pronounced.

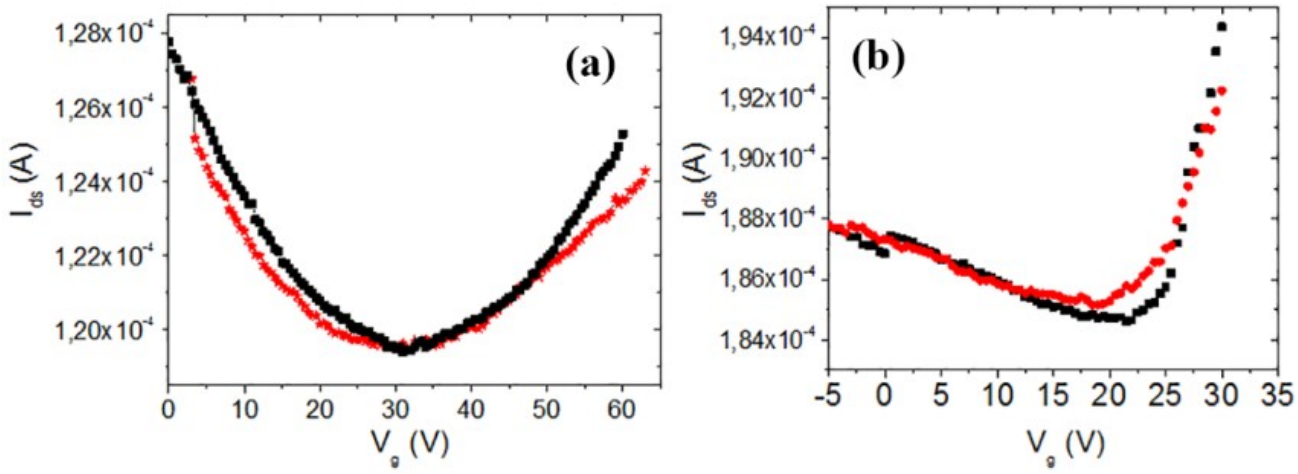

Fig. S3. (a) Dependence of the current I_{ds} on the gate voltage V_g at U_{DS} = 0.2 V for FLG film (thickness ~2 nm) irradiated with 77-MeV ions to a dose of 3×10^{11} ion/cm^2. Two curves correspond to repeated measurements. Carrier mobility calculated from few repeated measurements are equal to μ_h = 630-830 cm^2/Vs and μ_e = 630-830 cm^2/Vs. (b) Dependence of the current I_{ds} on the gate voltage V_g at U_{DS} = 0.2 V for FLG film (thickness ~2.5 nm) irradiated with 167-MeV ions to a dose of 1×10^{11} ion/cm^2. Carrier mobility calculated from few repeated measurements are equal to μ_h = 100-120 cm^2/Vs and μ_e = 980-1350 cm^2/Vs.