The ECR Caprice Sources of Multicharged Ions: New Results and a New Prototype G. MELIN, D. HITZ, F. BOURG, M. DELAUNAY, A. GIRARD, P. LUDWIG, Département de Recherche Fondamentale sur la Matière Condensée, CEA/Grenoble - An upgrade version 1.2 T-14.5 GHz, of previous compact Caprice sources of multicharged ions is presented. The three main ingredients of ECR ion sources have been optimized: (i) the magnetic configuration has high axial and radial magnetic fields, (ii) the 14.5 GHz rf frequency is compatible with the high magnetic field, (iii) more efficient electron sources allow the electron density to reach higher values (both first stage and wall coating as sources of electrons). Thus high ion currents can be extracted both for gases and metallic elements: 1130 eμA of O^{6+}, 190 eμA of O^{7+}, and 100 eμA of AR^{12+}, as well as 10 eμA of Ca^{14+}, 3 eμA of Fe^{17+} and Ni^{20+}, 1 eμA of U^{37+}. A new prototype, Caprice II, is being designed and will be also presented: the hexapole field is about 1.6 T, the source will be able to work at 14 and 18 GHz with boosted performance.