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**Metal-metal nanolayered structures for generation of hard x-ray radiation** PETER SHKOLNIKOV, ECE Department, SUNY at Stony Brook, ALEXANDER KAPLAN, ALEXANDER POKROVSKY, ECE Department, Johns Hopkins University — Our new research effort is aimed at developing a new X-ray source for medical applications, using low-energy electrons. Generation of intense narrow-band X-ray transition radiation (TR) by few-MeV electrons traversing solid multilayer structures, initially proposed for by us $\sim 1$ keV photons, changes dramatically at energies of interest to medicine, 30-50 keV, because of significant changes in dielectric constants. In particular, the choice of the materials for the multilayer target proposed by us for soft X- ray generation, is no longer applicable. In particular, our original approach was based on choosing a layer of a high-Z material as a "radiator" with a chosen $K$-shell transition, and the layer of low-Z material as a neutral "spacer." However, in the 30-50 keV range, TR spectra with such pairs show a spectral *dip*, not a peak,at the chosen $K$-shell. Our new theoretical investigations have shown that the optimal spacer now, as a rule, should have higher Z than the radiator. One example of such combination is Mo/Ag; we predict that its X-ray TR spectrum contains a strong, 1% wide peak at the K-edge of Mo, $\sim$20 KeV. We present our recent theoretical results of the subject, as well as our experimental results for the Mo/Ag target.

Alexander Pokrovsky
Johns Hopkins University

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