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**Nanosized Dendritic Silver Crystals.** Yu.P. Zaikov<sup>a</sup>, I.V. Zotin<sup>a</sup>, V.B. Malkov<sup>a</sup>, V.N. Strekalovsky<sup>a</sup>. <sup>a</sup>*Institute of High-Temperature Electrochemistry, Ural Branch RAS, Ekaterinburg, Russia.* E-mail: [mvb@ihte.uran.ru](mailto:mvb@ihte.uran.ru)

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It is known that dendritic silver crystals grow in aqueous silver solutions under certain conditions [1]. These crystals are as large as  $\sim 10^7$  nm along the first-order branch and  $\sim 10^5$  nm in the direction normal to the second-order branch. Nanosized dendritic crystals of silver were revealed for the first time in our study of the structure of dendritic silver crystals (JSM-5900LV) growing in 60 g/l aqueous solutions (Fig. 1). Generally, our crystals were up to  $\sim 10^3$  nm in size along the first-order branch and  $\sim 100$  nm in size in the direction normal to the second-order branch.

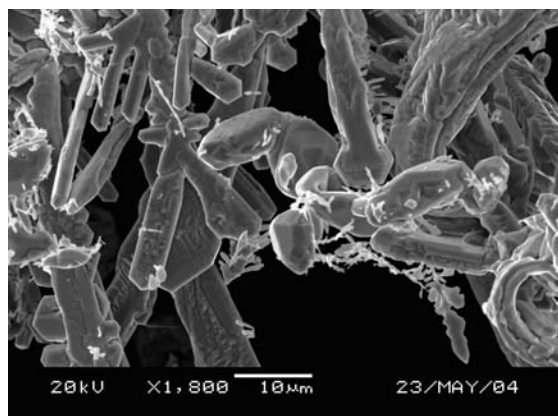


Fig. 1 The dendritic and nanosized dendritic silver crystals.

The nanosized dendritic crystals of silver had a specific feature that they were formed concurrently with usual dendritic crystals having the aforementioned dimensions. Also, while the usual dendritic crystals had well-developed branches, branches of the nanosized dendritic crystals of silver as if were at the initial stage of their formation. Branches of the first and second order were only observed in the nanosized dendritic crystals of silver, whereas the usual dendritic silver crystals included first-, second- and third-order branches. This feature of the nanosized dendritic crystals of silver suggested that they were formed as a result of the competitive growth of usual and nanosized dendritic crystals. It is this competition that might cause the appearance of the nanosized dendritic crystals of silver.

From what has been said above it may be inferred that the formation of nanosized dendritic crystals of silver requires special conditions, which predetermine, in the final analysis, the growth of nanosized dendritic crystals.

[1] Zotin I.V., Khranov A.P. *Rasplavy*, No. 2, 1997, p. 51.