

**Recrystallisation-accompanied phase separation in Ag-Fe and Ag-Ni nanocomposites:  
a route to structure tailoring of nanoporous silver**

Boris B. Bokhonov\* and Dina V. Dudina

Institute of Solid State Chemistry and Mechanochemistry, Siberian Branch of the Russian Academy of Sciences,  
Kutateladze str. 18, Novosibirsk, 630128, Russian Federation

\*Corresponding Author

Dr. Boris B. Bokhonov

Institute of Solid State Chemistry and Mechanochemistry

Siberian Branch of Russian Academy of Sciences

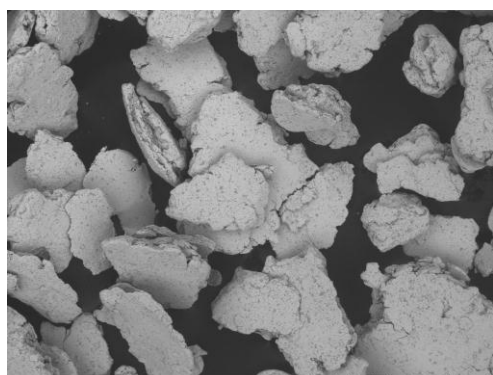
Kutateladze str. 18, Novosibirsk 630128

Russian Federation

Tel. 7-383-233-24-10

Fax 7-383-332-28-47

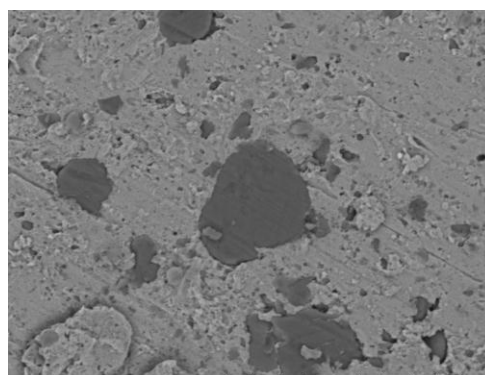
E-mail: bokhonov@solid.nsc.ru



TM-1000\_6872

L D3.0 x150 500 μm

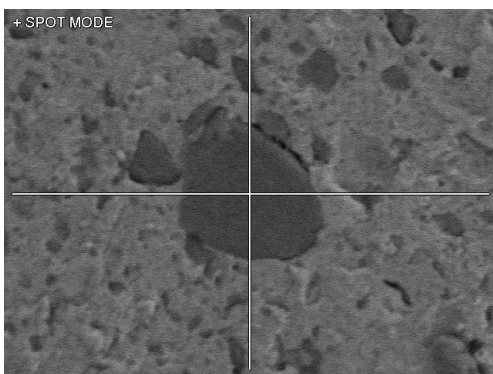
a



TM-1000\_6873

L D2.9 x5.0k 20 μm

b



TM-1000\_6876

L D2.9 x10k 10 μm

c

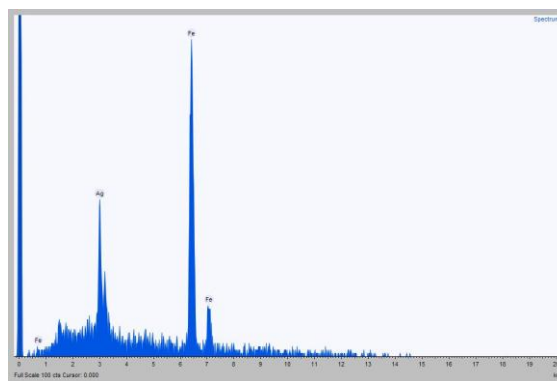


Figure 1 S. Morphology (a) and surface (b) of the Ag-Fe composite powders produced by mechanical milling for 10 min. Note that Fe inclusions ranging from 4 to 8  $\mu\text{m}$  are still present in a finer-structured Ag-Fe composite matrix as is confirmed by the EDS (c); mixing uniformity has not yet been achieved.

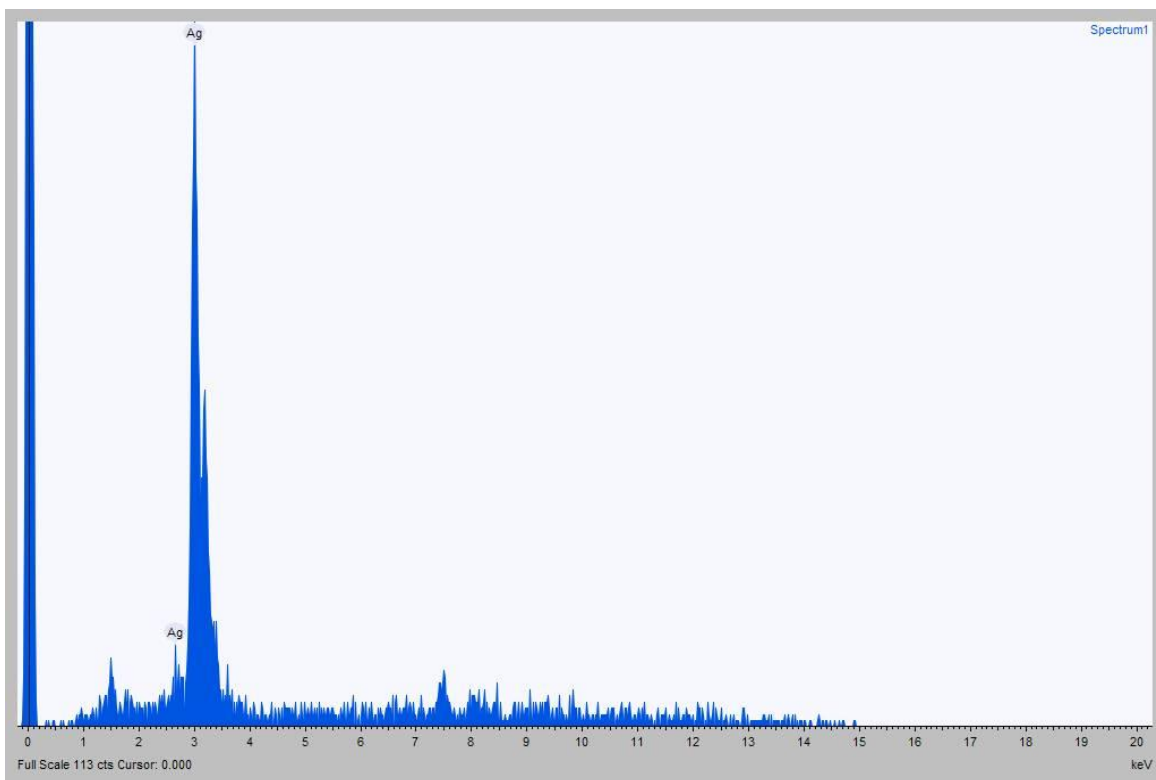


Figure 2 S. EDS spectra taken from the product of selective dissolution of Fe from the Ag-Fe nanocomposites in HCl solution showing silver as the only remaining component.

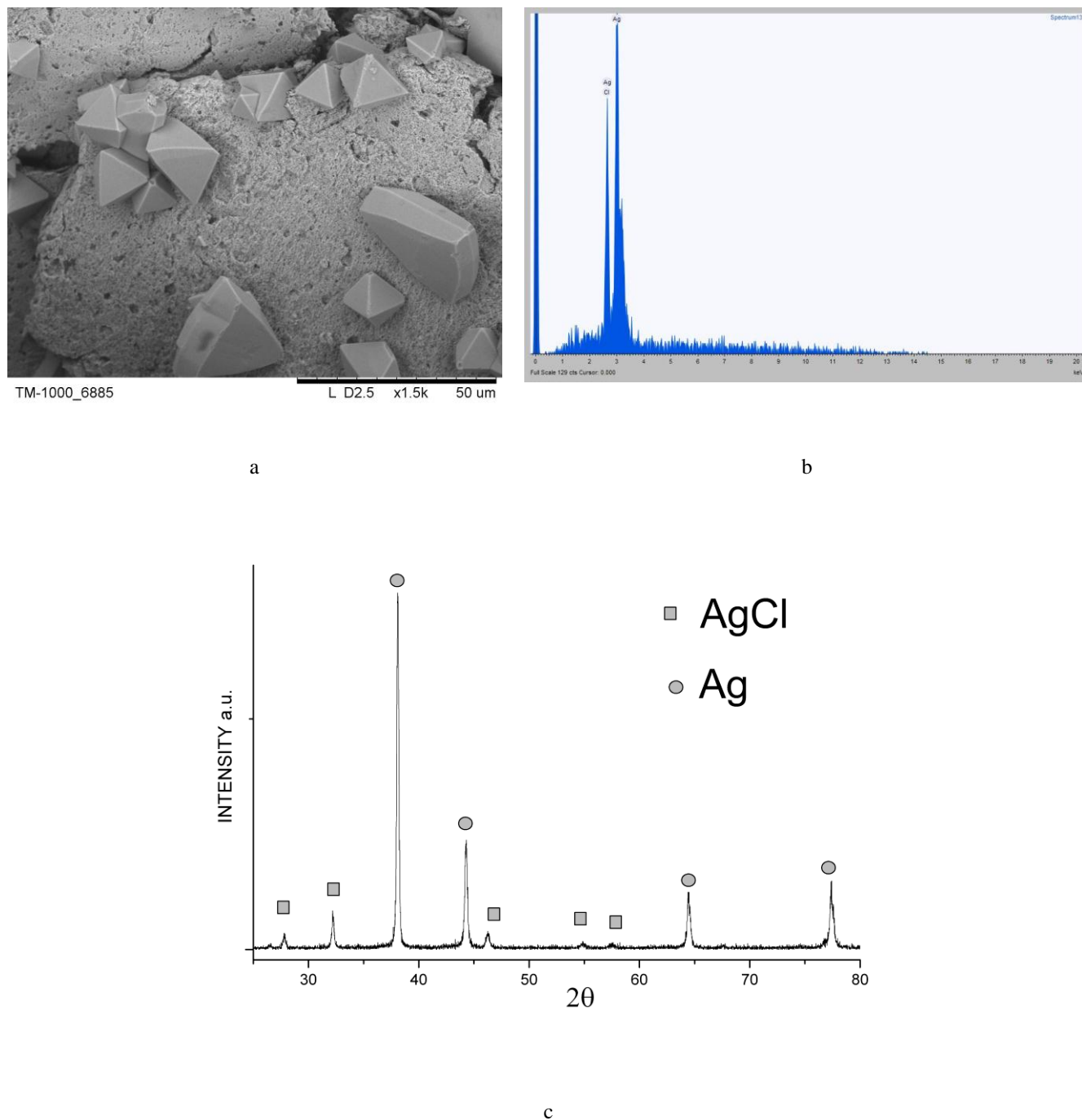


Figure 3 S. Morphology (a) and EDS (b) of AgCl crystals forming during prolonged exposure of the Ag-Fe nanocomposites to HCl solution and the corresponding XRD pattern showing the AgCl phase (c).

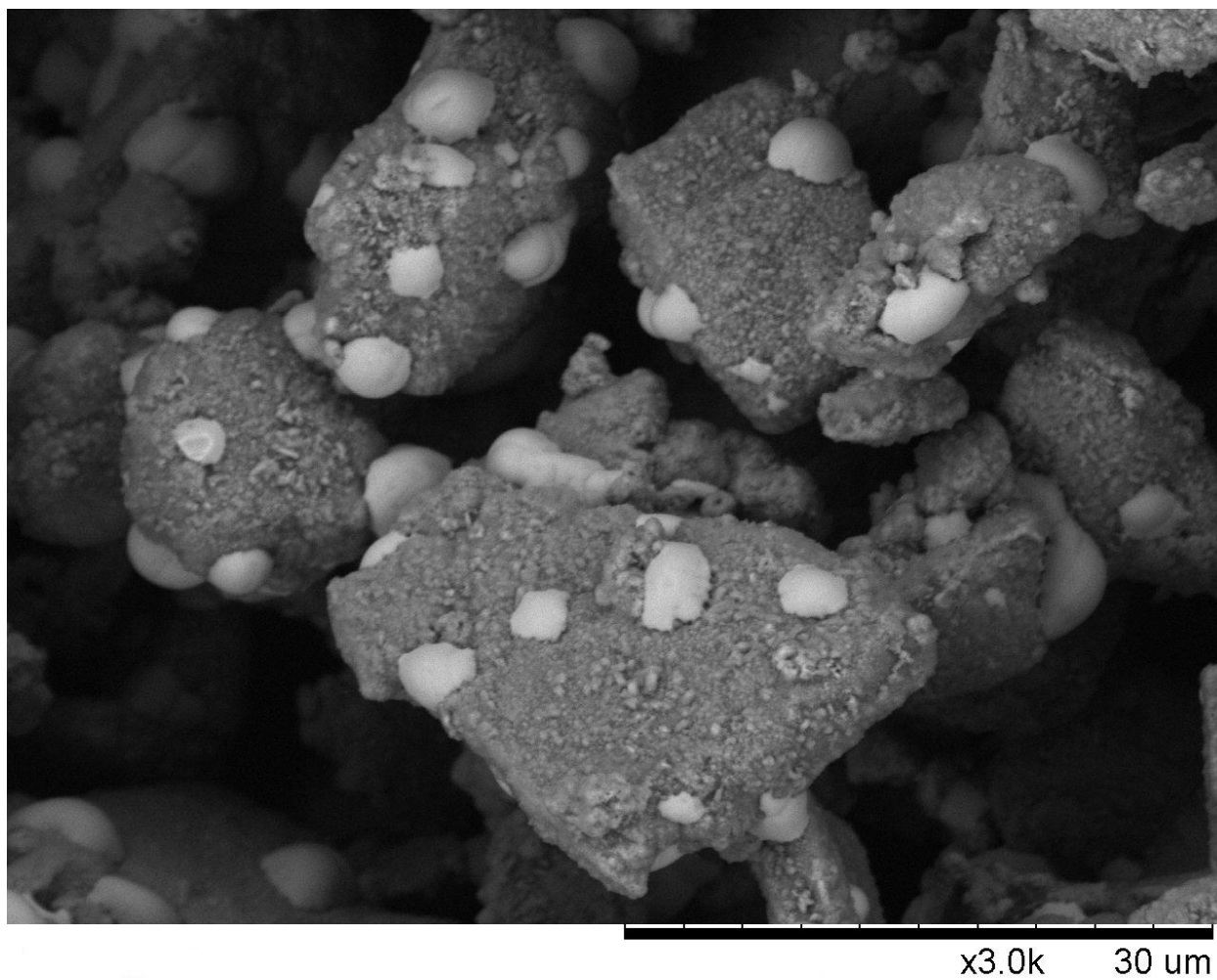


Figure 4 S. Microstructure of the Ag-Fe composites mechanically milled for 60 min and annealed in hydrogen at 600°C for 1 h. Microstructure evolution of the nanocomposites upon annealing leads to phase redistribution and extensive coalescence and growth of silver.