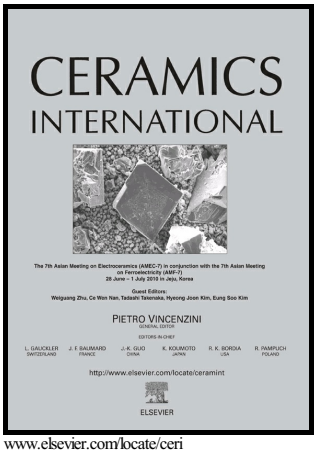

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Porous WS_2 and W_2N powders by hard templating with colloidal silica

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Abstract

Meso- and macroporous tungsten disulfide (WS_2) and tungsten nitride (W_2N) powders were successfully synthesized by reduction of [WO_3/colloidal silica] composites under hydrogen sulfide and ammonia gases respectively. The colloidal silica, marketed as Ludox®, was used as a hard template and its removal from the composite led to a porosity release. The products were characterized by X-ray diffraction, nitrogen adsorption, mercury porosimetry and electron microscopy. Well-crystallized samples with specific surfaces areas close to ~ 40 $m^2.g^{-1}$ were thus synthesized. The present approach might be easily extended to the synthesis of other nitrides and sulfides materials.

Keywords: Tungsten disulfide; Tungsten nitride; Surface properties; Colloidal silica; Hard-Template.

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