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(71) Applicants: **AGENCY FOR SCIENCE, TECHNOLOGY AND RESEARCH** [SG/SG]; 1 Fusionopolis Way, #20-10, Connexis North Tower, Singapore 138632 (SG). **HYDRO-QUÉBEC** [CA/CA]; 75, Rene-Levesque Blvd. West, Montreal, Québec H2Z 1A4 (CA).

(72) Inventors: **YING, Jackie Y.**; c/o Institute Of Bioengineering And Nanotechnology, 31, Nanos, Biopolis Way, Singapore 138669 (SG). **YANG, Jinhua**; c/o Institute Of Bioengineering And Nanotechnology, 31, Nanos, Biopolis Way, Singapore 138669 (SG). **ZAGHIB, Karim**; Hy-

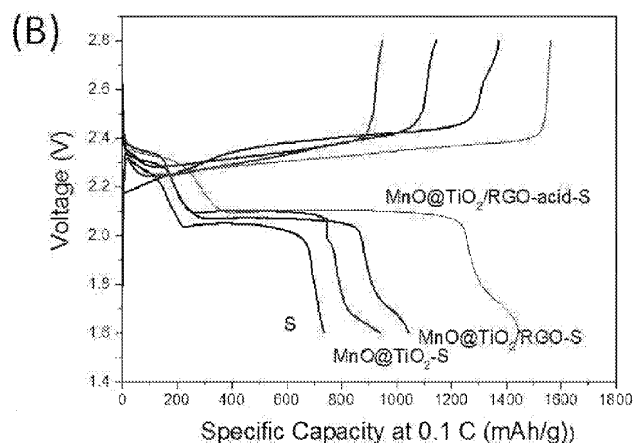
dro-Québec, 75, Rene-Levesque Blvd. West, Montreal, Québec H2Z 1A4 (CA). **TRUDEAU, Michel L.**; Hydro-Québec, 75, Rene-Levesque Blvd. West, Montreal, Québec H2Z 1A4 (CA).

(74) Agent: **SPRUSON & FERGUSON (ASIA) PTE LTD**; P.O. Box 1531, Robinson Road Post Office, Singapore 903031 (SG).

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(54) Title: CORE-SHELL NANOPARTICLES AND THEIR USE IN ELECTROCHEMICAL CELLS



(57) Abstract: Here are described core—shell nanoparticles comprising a porous metal oxide core of formula M_xO_y , a shell layer comprising TiO_2 and elemental sulfur (S_8), as an electrochemically active material, incorporated into the pores of the porous metal oxide core, their use in electrode materials as well as their methods of preparation. In a preferred embodiment, the porous metal oxide core is manganese oxide (MnO) and the elemental sulfur is incorporated into the pores of the porous metal oxide core through a melt diffusion process. Also described are composite materials, electrode materials, electrodes, and electrochemical cells comprising the core—shell nanoparticles and their use in lithium sulfur batteries.

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