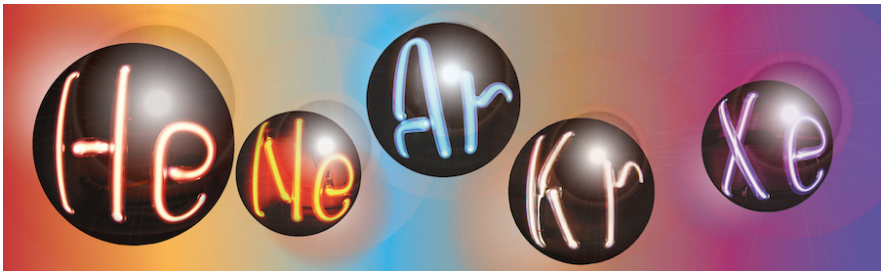

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Comparing the performance of CuO dispersive media for O2 capturing in Liquid Argon

Monday 26 August 2024 17:30 (20 minutes)

In this work, we have explored the potential of oxygen capture in Liquid Argon (LAr) of the innovative CuO dispersive layered double hydroxide media (R-LDH) and the Ce-doped R-LDH. Low-temperature experiments in the LAr Purification Cryostat (PuLArC) at IFGW/Unicamp were performed using LAr circulation through two filters, one containing the R-LDH (or the Ce-doped R-LDH) material and the other the BASF commercial copper material (Cu-02265 - proposed as a reference O2 getter media by Fermilab) for comparison. Interestingly, the experiments performed in PuLArC revealed that the R-LDH and Ce-doped R LDH innovative medias were capable of capturing O2 from recirculating LAr in PuLArC. For instance, the R-LDH media reduced the O2 contaminants concentration to 80% of its initial values after 200 min of LAr circulation. As for the reference media BASF Cu-S0226, this media reduced the O2 concentration to 40% of its initial value in the same time window. The performance/kg of the studied media will be compared and we will discuss the putative higher potential of the innovative Ce-doped and pure R-LDH media for O2 capturing in LAr which may invoke further tests of these media in larger scale LAr cryostats, possibly at Fermilab and CERN.

Primary authors: CAFFER, A. M. (UNICAMP); Dr GONÇALVES, R. G. (Advanced Materials and Energy Research Center, UFSCAR, São Carlos, Brazil); Dr PIZZI, H. B. ("Gleb Wataghin", Institute of Physics, UNICAMP, Campinas, Brazil); Dr PASSOS, D. S. ("Gleb Wataghin", Institute of Physics, UNICAMP, Campinas, Brazil); Dr FREITAS, G. S. ("Gleb Wataghin", Institute of Physics, UNICAMP, Campinas, Brazil); Dr REIS, C. (University of São João del Rei, São João del Rei, Brazil); Dr MAZALI, I. O. (Institute of Chemistry - UNICAMP, Campinas, Brazil); Dr CARDOSO, D. (Advanced Materials and Energy Research Center, UFSCAR, São Carlos, Brazil); Dr ASSAF, E. (Institute of Chemistry of São Carlos at USP, São Carlos, Brazil); Dr SOCCOL, R. (School of Chemical Engineering, UNICAMP, Campinas, Brazil); Dr BIANCHI, P. (School of Chemical Engineering, UNICAMP, Campinas, Brazil); Dr WIEDERHECKER, G. ("Gleb Wataghin", Institute of Physics, UNICAMP, Campinas, Brazil); Dr NORILER, D. (School of Chemical Engineering, UNICAMP, Campinas, Brazil); Dr DOS SANTOS, C. R. A. ("Gleb Wataghin", Institute of Physics, UNICAMP, Campinas, Brazil); Dr FONTES, M. (Brazilian Center for Research in Physics, Rio de Janeiro, Brazil); Dr CORREIA, D. (Brazilian Center for Research in Physics, Rio de Janeiro, Brazil); Dr FRANDINI, H. ("Gleb Wataghin", Institute of Physics, UNICAMP, Campinas, Brazil); Dr DEMOLIN, F. ("Gleb Wataghin", Institute of Physics, UNICAMP, Campinas, Brazil); Dr AUGUSTO, A. (Equatorial sistemas S.A., Grupo Akaer, São José dos Campos, Brazil); Dr DOUBNIK, R. (Fermi National Accelerator Laboratory, Batavia, Illinois, USA); Dr ADAMOWSKI, M. (Fermi National Accelerator Laboratory, Batavia, Illinois, USA); Dr MONTANARI, D. (Fermi National Accelerator Laboratory, Batavia, Illinois, USA); Dr ALEGRE, T. P. M. ("Gleb Wataghin" , Institute of Physics, UNICAMP, Campinas, Brazil); Dr MACHADO, A. A. ("Gleb Wataghin", Institute of Physics, UNICAMP, Campinas, Brazil); Dr SEGRETO, E. ("Gleb Wataghin", Institute of Physics, UNICAMP, Campinas, Brazil); Dr ADRIANO, C. ("Gleb Wataghin", Institute of Physics, UNICAMP, Campinas, Brazil); Dr ASSAF, J. M. (Advanced Materials and Energy Research Center, UFSCAR, São Carlos, Brazil); Dr PAGLIUSO, P. G. ("Gleb Wataghin", Institute of Physics, UNICAMP, Campinas, Brazil)

Presenter: CAFFER, A. M. (UNICAMP)

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