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## Scope and Status of Materials Research for Source Technologies at ESS

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Beam interception devices and neutron moderating systems in the ESS target environment are exposed to intense radiations of primary and secondary particles. Radiation induced degradation of the affected functional and structural materials poses challenges to availability and reliability of the neutron production systems. Due to unprecedentedly high proton beam energy driving the spallation process at ESS, there are very limited materials data available that address high radiation damage effects of energetic protons and neutrons. This requires dedicated efforts for executing materials research program for applications in the ESS target environments. The scope of the materials research at ESS currently includes the studies on spallation materials, proton beam window materials, polymeric materials, moderator materials, reflector materials, and muography technologies for target imaging. In this paper, we report the progress status of the materials research in the addressed study fields. Also, a vision of the materials research for the future post-construction operational phase will be presented.

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