

In the frame of the PhD thesis of Silvia D'Auria, supported by SABIC, and in collaboration with Chalmers, our partner in the H2020 RISE project VIT (Polymer engineering via molecular design: embedding electrical and optical properties into VITrimers), Prof. Roberta Pinalli and Prof. Enrico Dalcanale co-developed polyethylene-based ionomers as new material for more sustainable high-voltage direct-current (HVDC) power cables, a crucial component of future electricity grids that seamlessly integrate renewable sources of energy. The developed ionomers were obtained through high-pressure/high-temperature free radical copolymerization of ethylene in the presence of small amounts of ion-pair comonomers. The material demonstrated to feature thermo-mechanical and dielectric properties comparable to crosslinked polyethylene, the most common insulation of extruded HVDC cables. The results of this research entitled "Polyethylene Based Ionomers as High Voltage Insulation Materials" has been published as open access article in *Advanced Functional Materials - A Wiley Advanced Journal*, IF: 19.9 - and a patent application was filled.

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