290l Deep Desulfurization of Transportation Fuels Via Supported Ionic Liquid Membranes

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This work explores the use of supported ionic liquid membranes (SILMs) for the deep desulfurization of transportation fuels. These SILMs employ a room temperature ionic liquid (RTIL), immobilized in a solid support, to selectively remove sulfur compounds from a fuel stream. RTIL properties include non-volatility, thermal stability, the ability to remain liquid over a wide temperature range, and the capability of solvating a wide variety of organic and inorganic species; these assets make RTILs attractive alternatives to traditional solvents. Significantly, the physical and chemical properties of RTILs can be "tuned" via selection of cation or anion and/or varying the length of the alkyl chain on the cation. Thus the separation properties of the RTIL (and consequently the SILM) can be adjusted to selectively remove sulfur compounds from fuel streams. This poster presents results of study of use of model SILMs for removal of sulfur compounds from model transportation fuels.