The conversion of $\alpha$-pinene to cis-pinane using a nickel catalyst supported on discarded fluid catalytic cracking catalyst with an ionic liquid layer

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Scheme S1 Schematic illustration of the set up for the hydrogenation of α-pinene.

Fig. S1 EDS mapping of the SCILL catalyst for Ni, N, F.

Fig. S2 FTIR spectra of ionic liquid and different ionic liquid loading of the catalyst.
Scheme S2 Ni/DF3C with various of ionic liquid loading.
Fig. S3 The effect of temperature (A) and H₂ pressure (B) on the catalytic performance.
Table S1. The effect of different kinds of ionic liquid coating on the catalytic performance.

| Catalyst   | Ionic liquid | MLs | Conversion (%) | Selectivity (%) |
|------------|--------------|-----|---------------|-----------------|
| Ni/DF3C    | Free         | 0   | 99.47         | 87.94           |
| SCILL      | [EMIM][BF₄]  | ~1  | 99.14         | 88.73           |
| SCILL      | [C₂OHmim][BF₄] | ~1 | 99.06         | 98.26           |

Fig. S4 TGA of the used SCILL catalyst after 20 runs.