

## **Solid Alkylation**

Research in the area of a solid catalyst for alkylation has been ongoing for many years. Numerous patents exist for different catalysts, catalyst supports, and processes. It is well known that Lewis acids will catalyze the alkylation reaction (alkylation of isobutane with olefins was discovered using aluminum chloride promoted with HCl). Several of the current preferred solid catalysts use a salt of HF: either boron trifluoride ( $\text{BF}_3$ ) or antimony pentafluoride ( $\text{SbF}_5$ ). Since every alkylation process produces heavy polymers, solid catalysts have the tendency to foul quickly. Therefore, solid catalyst processes have two major hurdles to overcome: catalyst life and catalyst regeneration. Several companies are engaged in active research in this area, but no one has yet commercialized a new alkylation technology.