

## **FennoFlake: a project to find flake graphite ores in the Fennoscandian shield and utilize graphite**

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The European Commission's "Report on critical raw materials for the EU (2014)" state that natural graphite is one of the 20 most critical materials for EU. In 2012, EU consumed 13% of all flake graphite in the world but produced only 3%, which stresses the demand for the material. Flake graphite is important in several applications like batteries, carbon brushes, heat sinks, etc. Flake graphite is formed in high metamorphic areas. Graphite can also serve as raw material for the production of graphene (a single layer of graphite), which is commonly used in many nanotechnological applications, e.g. printed electronics, sensors, etc. The processing steps to obtain pure graphene from the graphite ore include fragmentation, flotation and exfoliation, which usually are cumbersome and result in damaging of the graphene structure. We have started a new project, FennoFlakes, where geologists and chemists cooperating to fill the whole value chain for graphite; 1. Exploration of graphite ores (geological and geophysical methods). 2. Petrological and geochemical research on the ores. 3. Development of fragmentation methods for graphite ores. 4. Chemical exfoliation of the enriched flake graphite to separate the pure flake graphite into single and multilayer. 5. Test the quality of the produced graphite/graphene material in several high-end applications with totally environmentally friendly green and disposable material combinations.