SOLUBLE HUMIC SUBSTANCES PRODUCING FROM LIGNITE

**Description**
The developed method is intended for production of soluble humic substances from Kansk-Achinsk lignite. Soluble humic substances can be used in oil-well sinking, gold extraction, metallurgical processes, for increasing soil fertility and as a plant growth stimulator.

The process is based on conversion of the organic mass of modified lignite to water-soluble products under lignite treatment by peroxide in water-organic medium at room temperature and normal pressure, according to the scheme:

![Process flow scheme](image)

- Lignite
- Activation
- Modified lignite
- Treatment by peroxide in water-organic medium
- Soluble humic products
- Mineral part

The process technology does not require the high expenditure of energy and uses simple and ecologically safe reagents.

**Technical appraisal and economic benefits**
The development has following advantages in comparison with traditional technologies:
- Practically complete dissolution of organic mass of lignite with simultaneous isolation of a mineral part of lignite;
- Decrease in temperature and duration of dissolution process;
- Cost saving by 30%.

**Application areas**
Agriculture, oil extraction, gold extraction and metallurgical industry.

**Development stage**
The developed process was tested in the laboratory device. The stimulating effect of humic products on plant growth was shown.

**Patent situation**
A patent granted in Russia in 1996.
**Commercial offers**
Joint development of semi-industrial plant. Technology adaptation to new raw materials according to the customer request.

**Estimated cost**
Contractual price.

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