THEREFORE WHAT IS CLAIMED IS:

1. A process for growing diamonds, comprising;

exposing diamond seed particles to vapour phase C_{70} in the presence of an element selected from the group consisting of selenium and phosphorous at a temperature of at least ~~550~~ 500°C to cause at least some of the diamond seed particles to grow.

2. A process for growing diamonds, comprising:

providing a plurality of diamond seed particles;

providing a quantity of C_{70} powder and an element selected from the group consisting of selenium and phosphorous, said C_{70} ~~and~~ powder and said element being in flow communication with said diamond seed particles; and

heating said C_{70} powder to produce C_{70} powder in vapour phase, and heating said element and said diamond seed particles at a temperature of at least 500°C and for a period of time to cause at least some of said diamond seed particles to grow.

3. The process according to claim 2 wherein the temperature is in the range from 500°C to 600°C and said period of time is from 18 days to 60 days.

4. The process according to claim 3 wherein the pressure is below 2.66×10^{-3} Pascals (2×10^{-5} torr).

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5. A process for growing single crystal diamonds, comprising:

providing a plurality of diamond seed particles having a mean ~~diameter~~ volume;

providing a quantity of C_{70} powder and a reacting agent, said C_{70} powder and said reacting agent being in flow communication with said diamond seed particles; and

heating said C_{70} powder to produce C_{70} in the vapour phase, and heating said reacting agent and said diamond seed particles under vacuum at a temperature of from about 500°C to about 600°C and for a period of time of from about 18 days to about 60 days to cause an increase in the volume of at least one of said diamond seed particles.

6. The process according to claim 5 wherein the step of providing a plurality of diamond seed particles comprises providing diamond seed particles having a mean diameter of 1.5×10^{-6} m.

7. The process according to claim 6 wherein the step of heating comprises increasing the mean diameter of said diamond seed particles to at least 1×10^{-5} m.

8. The process according to claim 7 wherein said reacting agent is selected from the group consisting of selenium and phosphorous.

9. The process according to claim 8 wherein said reacting agent is selected

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from the group consisting of sodium, potassium and sulphur.

10. The process according to claim 8 wherein said temperature is 550°C.

Insert new claims 11- 24

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