1. There are no isotropic, symmetric third order tensors. Proof by contradiction:

hypthesize a tensor, $K_{ijj}$ that is isotropic. Then it is invariant under coordinate rotations (using rotation matrix $S$):

$$K_{ijj} = S_{ip} S_{jq} S_{kr} K_{pq}$$

or equivalently,

$$K_{ijj} = S_{jp} S_{iq} S_{kr} K_{pq}$$

Now if $K_{ijj}$ is also symmetric, then $K_{ijj} = K_{jij}$.

so, from above

$$S_{ip} S_{jq} (S_{kr} K_{pq}) = (S_{jp} S_{iq}) (S_{kr} K_{pq})$$

or

$$S_{ip} S_{jq} = S_{jp} S_{iq}$$

now contract indices $p$ and $j$ by multiplying by $S_{pj}$

$$S_{ip} S_{jq} S_{pj} = S_{jp} S_{iq} S_{pj} \Rightarrow S_{ip} S_{pq} = S_{pp} S_{iq}$$

or in matrix notation

$$S_i S_j = \text{trace}(S) S_i$$

or $S_i = \text{trace}(S) I_i$

but then $S_i$ is not a rotation.

Note that this proof fails for antisymmetric matrices, since the inverse of $S_{kr} K_{pq}$.

2. There is no piezoelectric effect in isotropic crystals.

Since $T_{ij} = K_{ij} E_k$, and stress $T_{ij}$ is symmetric, $K_{ij}$ must be symmetric in ($ij$). But no such isotropic tensor exists.