From rural Kenya to a PhD in Physics – Material Science; How my parents made it possible

Winfred Mueni Mulwa

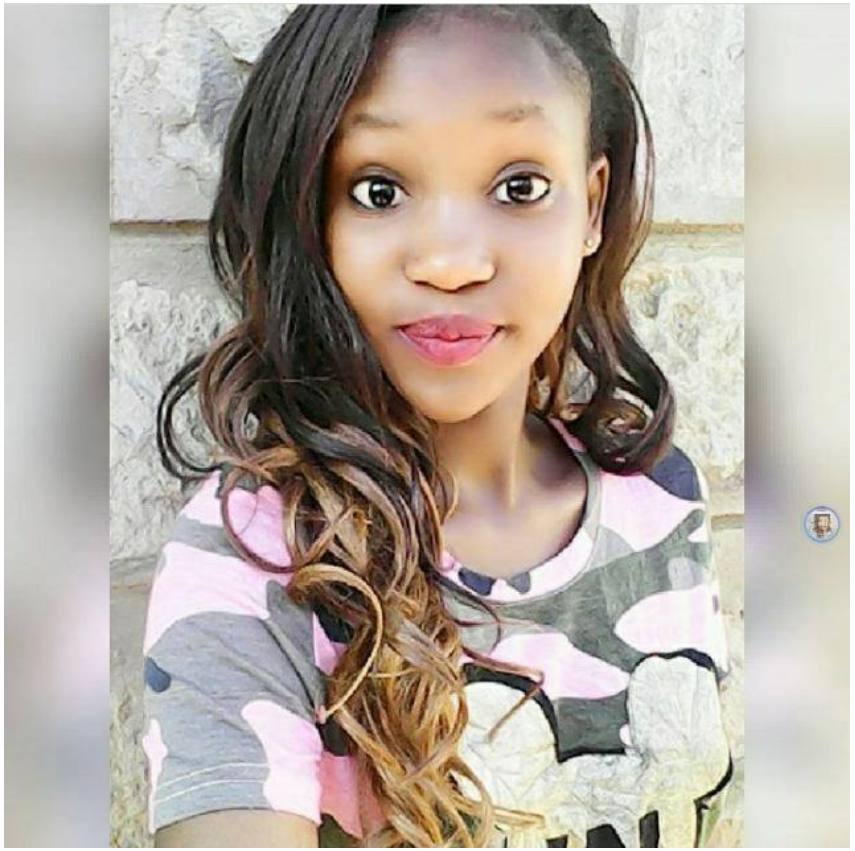
My experience as a village girl.

- Long distance in search of water.
- 3 km to school and 3 km from School.

CHALLENGES

- **Although my dad was a bit exposed, he could not take his children to big schools in the city, especially the girls.**

- **Even in a boarding secondary school, we still used to go to the river for bathing water.**
- **In Kenya (East Africa) compared to other African countries, getting a baby out of wedlock was a crime.**



- **Despite all those challenges, I still made it.**
- **At all my levels of education, there were always few girls in class compared to the men.**

The best PhD student in South African Photonic Conference

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Energetic, electronic and optical properties of lanthanide doped TiO_2: An *ab initio* LDA+*U* study

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ABSTRACT

Substitutional energies, thermodynamic charge transition levels and optical properties of lanthanide doped anatase TiO_2 has been investigated using local density approximation with the Hubbard *U* correction (LDA+*U*) within the density functional theory formalism. All the lanthanides apart from La introduced impurity states in the host band gap on doping. The calculated substitutional energies indicate that it is possible to dope TiO_2 with lanthanide ions. The optimal doping percentage was predicted to be ~3% and dopant levels resulting from Ce, Nd, Sm, Gd and Tm doping were found to possess negative U

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Effect of Cu^{2+} doping on the structural, electronic and optical properties of ZnAl2O4: A combined experimental and DFT+U study

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ABSTRACT

Using the sol-gel technique, pristine and Cu^{2+} doped gahnite ($ZnAl_2O_4$) samples were prepared at $0 \leq x \leq 1.24$ Cu^{2+} percentages. X-ray diffraction (XRD) analysis confirmed that the prepared samples were cubic and that there was no phase segregation. Energy dispersive X-rays (EDS) was then used to investigate and confirm the purity of Zn, Al, O and Cu samples with no other characteristic peaks. From the XRD spectra of Cu^{2+} at different concentrations Cu^{2+} doping was found not to lead to significant

- Teach the message of science when they are still young.

- Create an enabling environment
- Mentoring the next
- generation of Physicists in Africa.

Thank You
Dankie

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