We are inviting motivated candidates for a PhD studentship in the exciting field of Room Temperature Masers.

We’ve all heard of lasers. Lasers amplify light (Light amplified stimulated emission of radiation) and are a several billion dollar industry. We use them everywhere from supermarket checkouts to CD players and laser eye surgery. But before the laser was the maser where instead of light amplification, microwaves were amplified. We use microwaves for our mobile phones, satellite networks and we’re pretty good at getting information from A to B, even in challenging circumstances. And it doesn’t get much more challenging than space. And yet with microwave technology, we can even get images 225 million kilometres from Mars to Earth. We do this using masers which can take weak signals and amplify them without adding noise.

So why don’t we use masers everywhere? Up until recently masers were bulky, needed cryogenic cooling and a large magnetic field. There was little prospect therefore of mass production, miniaturisation or of cost reduction – the three key things that enabled the laser to succeed. At Imperial we’ve solved this 60 year old mystery. We have a maser that functions at room temperature, and without the need for an external magnet. Potential applications for the maser include more sensitive medical scanners; chemical sensors for remotely detecting explosives; advanced quantum computer components; and better radio astronomy devices. Our maser uses pentacene in a P terphenyl host matrix and we are looking for other molecules. We are also interested in inorganic materials – possibly using defect centres in diamond for example.

We are looking for crystal chemists familiar with organic molecules such as pentacene. We are also looking for solid state physicists who are interested in tacking this completely new area of Materials science. Candidates should have or be expected to have a Master’s degree or a First degree or (equivalent) with 1st Class or Upper Second Class in Materials Science, Chemistry or Physics or relevant discipline.

This PhD studentship is open to UK home students or European students who have spent the last three years in the UK prior to the start of the course. The studentship will cover tuition fees plus the standard maintenance stipend of £16,296 per year.

The prospectus, entry requirements and application form (under ‘how to apply’) are available at: [http://www.imperial.ac.uk/pgprospectus](http://www.imperial.ac.uk/pgprospectus)

For further details of the post, please contact Professor Neil Alford at n.alford@imperial.ac.uk. Applicants will be required to complete an electronic application form. The starting date of the studentship is flexible.

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*Imperial Managers lead by example.*

*Committed to equality and valuing diversity. We are also an Athena SWAN Silver Award winner, a Stonewall Diversity Champion, a Two Ticks Employer, and are working in partnership with GIRES to promote respect for trans people*