Crystalline purines are found in every organism. Their crystallisation inside the organism can often cause problems. One of the most commonly known compounds belonging to this group are salts of uric acid. Uric acid is a by-product in the body, and is responsible for the medical condition known as gout, characterised by inflammation and pain in areas such as the joints. Gout is caused by the deposition of spiny crystals of uric acid and its salts in the synovial fluid. With this in mind, experiments were designed to explore whether the shape of these crystals can be altered while formed or present in the body.

The main aim of project was to investigate how the crystals of purine and purine-based salts are formed. Solutions of (i) purines, (ii) salts of purines, (iii) purines in various solvent mixtures, (iv) purines at varying pH and (v) purines on metal surfaces were prepared. Crystals precipitated out of these solutions were isolated and observed under the polarised light-microscope. In addition, test compounds were also used to assess crystallisation. HS microscopy was used to explore changes in the rate of evaporation on crystal formation. Some of the samples were analysed using PXRD.

These studies allowed us to investigate seeding processes and shed more light on how formation and shape of crystal seeds can be delayed or altered. Using this information, a variety of purine-based salt crystals with different crystal morphologies, including uric acid crystals, were obtained.

**Keywords:** Purines, crystal growth control, gout crystals