

**Abida Rehman**  
Lecturer  
Govt. College (W) 122 JB-Sargodha Road, Faisalaabad  
Higher Education Department, Punjab, Pakistan

Address P-1369/9A Street NO 5  
Block-B Nighabanpura  
Faisalabad, Pakistan

Telephone (mobile): 00923216509402  
E-mail: [abidawaseem@gmail.com](mailto:abidawaseem@gmail.com)

### Education

Feb 2012- Feb 2016 **PhD in Chemistry**, University of Cambridge, Cambridge, UK  
Sep 2005- Jan 2008 **M.Phil in Chemistry**, University of Agriculture, Faisalabad, Pakistan  
Sep 1999- Jan2001 **MSC in Chemistry**, University of Agriculture, Faisalabad, Pakistan

### Research Topics

**PhD** Preparation and Characterization of Various Solid Forms of Triamterene  
**M.Phil** Textile Effluents Affected Seed Germination and Early Growth of Some Winter Vegetable Crops  
**MSc** Effect of Sunflower's (*Hallianthus annus* L.) Allelochemicals on Cotton (*Gossypium hirsutum* L.) Germination, Seedling Growth and their Identification

### Key Research Skills

#### *Laboratory*

**SCXRD** Used for structure solution from single crystal  
**PXRD** Used as a method for structure solution from powder data and very efficient finger printing technique to confirm crystal form and to distinguish polymorphs.  
**DSC** To study melting points, crystallization and polymorphic changes.  
**TGA** Thermo gravimetric analysis of organic materials to get weight loss of different fractions.  
**FTIR** Used for the determination of functional groups in the organic compounds  
**UV/Visible** For the measurement of absorption and emission of radiations from the compounds under observation

#### *Related software skills*

Cambridge structural data evaluation soft wares, Mercury and Conquest. X'Pert High Scorer Plus to study diffraction from powder samples.

#### *Communication*

**Written** Preparation of scientific manuscripts for publications  
**Oral** Regular group presentations  
**Posters** Presentations of posters at local and international conferences

## Research Interests

I am interested in the “construction and characterization of novel pharmaceutical materials” using advanced analytical methods. Development of new drugs involves significant research in both the synthesis of active drug molecules as well as the ability to control the nature of form in which the drug is delivered to the patient. Various forms of delivery are known including inhalation, injection, creams and transdermal patches. The most common form however is the tablet. Within the tablet will be the active drug (usually as a crystalline material) along with various excipients i.e. components added to improve taste, binding, colour. A major issue, however, is related to controlling the nature of the crystalline form of the drug. Frequent occurrence of polymorphs, solvates or hydrates can be problematic to the development process. Solubility of the drug in particular can be a major issue. Several international groups are now examining strategies for improving the solubility of poorly soluble drugs.

Various approaches are used to understand drug form development which will help in examining salts, cocrystals and amorphous forms. A variety of crystal engineering principles are exploited to select and design cocrystal system. In this work mechanical force is used instead of heat to transfer energy which will provide a clean and safe way to conduct a chemical reaction. We use grinding as a tool for conducting solvent free synthesis of materials that have catalytic or pharmaceutical significance from the simplest and cheapest possible precursors (e.g. minerals).

The work involves extensive materials preparation and characterization. I use state-of-the-art-techniques like advanced diffraction methods (X-ray, electron) for structural determination in the pursuit of understanding crystallography and nature of interactions in crystal. Additionally there is the usage of spectroscopic (Raman and IR) and thermal methods. Some computational works are required in terms of using simulation packages to further understand the interactions in a solid material.

## Publications

- 1) **Rehman A.**, H.N. Bhatti, H. R. Athar.(2009). Textile Effluents Affected Seed Germination and Early Growth of Some Winter Vegetable crops. *Water, Air and Soil Pollution*. Springer Science + Business media B.V. 198:155-163 DOI 10.1007/s11270-008-9834-5. **(Impact Factor 1.676)**
- 2) **Rehman A.**, B. Saleem, M. Jamil Qureshi, Z. Ata and M. Rahman. (2001). Effect of Sunflower's (*Hallianthus annus* L.) Allelochemicals on Cotton (*Gossypium hirsutum* L.) Germination and Seedling Growth. *Pakistan Journal of Biological Sciences* 4: 209-212.
- 3) Saleem, B., J. Iqbal, **Abida**, (2000). Allelopathic Effect of Aqueous Extract of Tobacco (*Nicotiana tobaccum*) on the Growth and Quality of Wheat (*Triticum Aestivum* L.). Abstracts Chem. Conference 2000. Department of Chemistry, University of Peshawar. Page No. 68.

## Experience

8 Years teaching and research experience as a lecturer at Government Degree College (W) Saifabad, Faisalabad, Pakistan.

## Awards

Three and a half year family funded scholarship form Islamic Development Bank in collaboration with CCT and COT at the University of Cambridge.