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Coherent X-ray Diffraction from Sub-micron Protein Crystals. Celine Besnard[a,b], Francesco Gramiccia[a], Sebastian Basso[a], Cameron Kewish[c], Phil Pattison[d,a], Franz Pfeiffer[e], Marc Schiltz[a]. [a]*Laboratory of Crystallography, EPFL, Switzerland.* [b]*Laboratory of Crystallography, University of Geneva, Switzerland.* [c]*SLS ,PSI, Switzerland.* [d]*SNBL, ESRF, Grenoble, France.* [e]*Departement Physik, TU München, Germany.*
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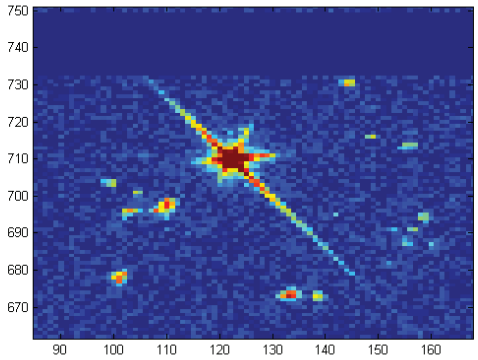
When a crystal is illuminating by a coherent X-ray beam, the Bragg peaks are superimposed with a complex coherent interference pattern. This effect has been observed on nanocrystals of lead, gold, silver and other relatively simple materials [1]. Extending the study of coherent effects to more complex materials such as protein is of great importance, since it opens the possibility of solving the crystallographic phase problem by oversampling [2].
We report here the observation of coherent scattering effects on powder preparations of sub-micron crystals of D-xylose isomerase. The crystals were illuminated by a coherent X-ray beam, using the cSAXS Beamline at SLS, Switzerland. The powder rings consist of discrete Bragg peaks which display clear star-shaped features (Fig 1) as well as truncation rods. We performed analytical calculations of the crystal shape transform [3] and were able to reproduce the observed features, thereby demonstrating that they are related to the crystal size and shape. The coherent scattering effects add a new dimension of complexity to the analysis of protein powder diffraction data, which is of importance for proposed applications at X-ray free-electron laser sources [4].



[1] Robinson I.K., Vartanyants I.A., Williams G.J., Pfeifer M.A., Pitney J.A., *Phys. Rev. Lett.* **2001**, 87, 195505 [2] Miao J, Sayre D. Acta. Cryst. A 2000, 56, 59 [3] Komrska J., *Optik.* **1988**, 80, 171 [4] Shapiro et al. *J. Synchrotron Rad.*, **2008**, 15, 593-599.

Keywords: coherent diffraction; protein crystals

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Structure and Electrochemical Studie of (Z)-1,2-Diphenyl-2-(phenylhydrazono)ethanone. Amel Djedouani[a], Massouede Yahiaoui[a], Abderrahmen Bendaas[a], Soufiane Bouacida[b]. [a]*Laboratoire d'Electrochimie des Matériaux Moléculaires et Complexes, Université Farhet Abbas Sétif Algeria DZ 1900.* [b]*Département de Chimie, Faculé des Sciences et Sciences de l'Ingénieur, Université A. Mira de Béjaia, Route Targua Ouzmour 06000, Algeria.*
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The synthesis and structure of Schiff bases have attracted much attention in biology and chemistry [1]. One of the aims of investigating the structural chemistry of Schiff bases is to develop protein and enzyme mimics [2]. Structural information is useful in investigating the coordination properties of Schiff bases functioning as ligands [3]. There are only a few reported crystal structures of Schiff bases derived from benzil [4]. A series of Schiff bases has been synthesized in our laboratory by the condensation of aromatic amines and diaromatic amines with carbonyl groups [5]. As part of the ongoing work, we recently synthesized the title compound, and determined its crystal structure.
The asymmetric unit contains two independent molecules, viz. A and B (Figure 1).
Our work is dedicated for the synthesis, characterisation and electrochemical study survey of new phenylhydrazone, derivative from benzil and phenylhydrazone. These compond was characterised by usual spectroscopic methods so as IR, NMR, and RX. The componed has the following structural properties: Triclinic, P1, a=11.739(2) Å, b=12.107(2)Å, c=12.521(2)Å, α=107.199(7)°, β=94.809(8)°, γ=107.535(7).
An electrochemical study, by cyclic voltammetry for the the compond, has been achieved in aprotic medium, DMF-TBAHFB 0.1M, on a platin electrode of 2 mm of diameter. A cyclic sweep in the -1.8 to +1.8 V range show an anodic peak at 1.43V and two cathodic peaks at -0.717 V and -0.149 V.

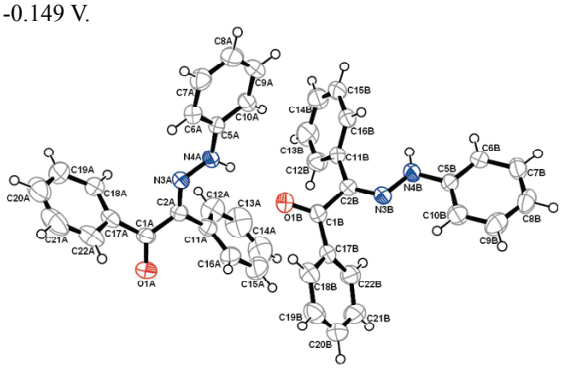

Figure 1 : The asymmetric unit of the title compound with the atomic labelling scheme.

[1] Kahwa, I. A., Selbin, J., Hsieh, T. C.-Y. & Laine, R. A., **1986**. Inorg. Chim. Acta, 118, 179–185. [2] Santos, M. L. P ., Bagatin, I. A., Pereira, E. M. & Ferreira, A. M. D. C., **2001**. J. Chem. Soc. Dalton Trans. pp. 838–844. [3] Saim, O., Dinc ¸er, U., Leyla, T. Y., Nermin, B. & Bahattin, G., **2004**. J. Mol. Struct. 688, 207–211. [4] Bai, Y., Liu, J., Dang, D.-B. & Duan, C.-Y., **2006**. Acta Cryst. E62, m1805–m1807. [5] Ghames, A., Douadi, T., Haffar, D., Chafaa, S., Allain, M., Khan, M. A. & Bouet, G. M., **2006**. Polyhedron, 25, 3201–3208.

Keywords: benzil; schiff bases; cyclic voltammetry