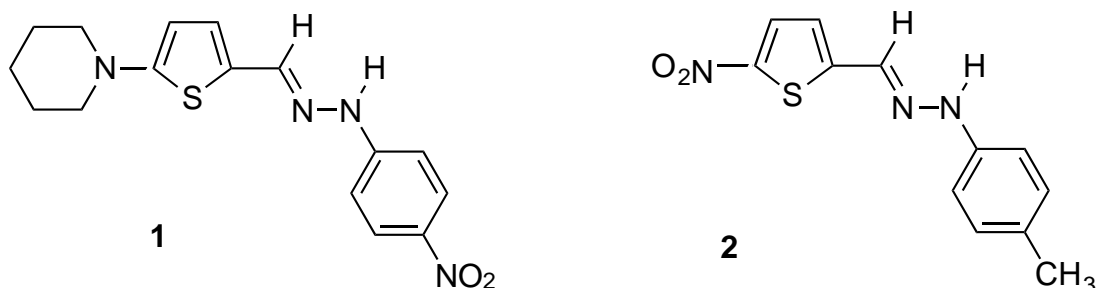


1.2 Push-Pull Benzaldehyde Phenylhydrazone and Thiophene Carboxaldehyde Phenylhydrazone, Two Efficient Classes of Crystalline Materials for Electro-optics

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Push-pull derivatives of benzaldehyde phenylhydrazone show a high tendency for a noncentrosymmetric crystal packing. In order to understand these results, we have modelled the crystalline structures of active materials and realised the existence of dimer units with a Lambda shape (Λ) which force the molecules to crystallise in a noncentrosymmetric space group.

In the framework of preparation of molecules with large molecular hyperpolarizabilities, a new series of hydrazone derivatives containing one thiophene ring in the conjugation path has been prepared. Among them the 5-(1-Azacyclohexyl)-2-thiophene carboxaldehyde-4-nitrophenylhydrazone (**1**) and 5-Nitro-2-thiophenecarboxaldehyde-4-methylphenylhydrazone (**2**) give a highly efficient second harmonic signal in powder tests at 1.3 μm (Fig.2).



The first one crystallises in thin leaves and consequently the preparation of bulk crystals remains difficult. The second one crystallises in two different modifications: violet needles and black prisms which are highly efficient in the second harmonic powder test. Small crystals of these two phases have been obtained by slow evaporation and their crystalline structures are being determined at the University of Lausanne (Group of Professor G. Chapuis).