

## **SUPPORTING INFORMATION**

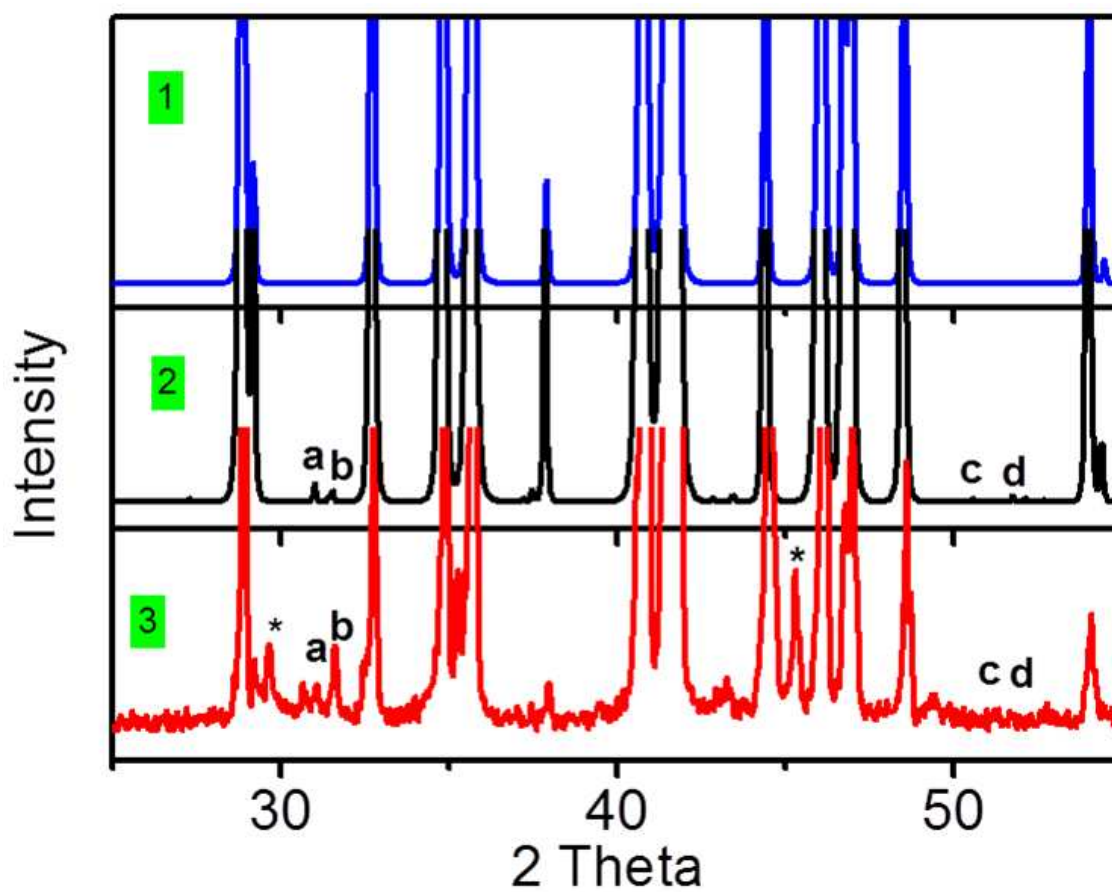
### **A New Structure Type in the Mixed Valent Compound YbCu<sub>4</sub>Ga<sub>8</sub>**

**Udumula Subbarao<sup>1</sup>, Matthias J. Gutmann<sup>2</sup>, Sebastian C. Peter<sup>1\*</sup>**

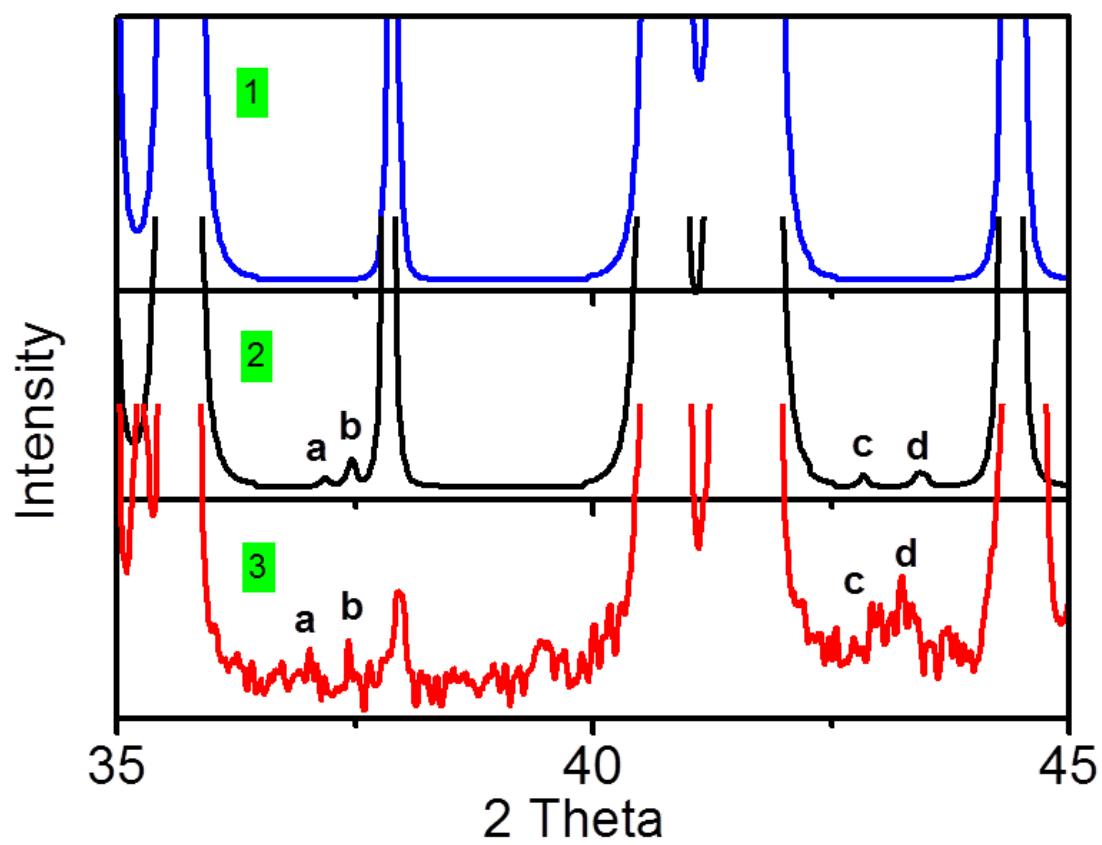
<sup>1</sup>New Chemistry Unit, Jawaharlal Nehru Centre for Advanced Scientific Research, Jakkur,  
Bangalore, 560064, India

<sup>2</sup>ISIS Facility, STFC-Rutherford Appleton Laboratory, Didcot, OX11 0QX, United Kingdom

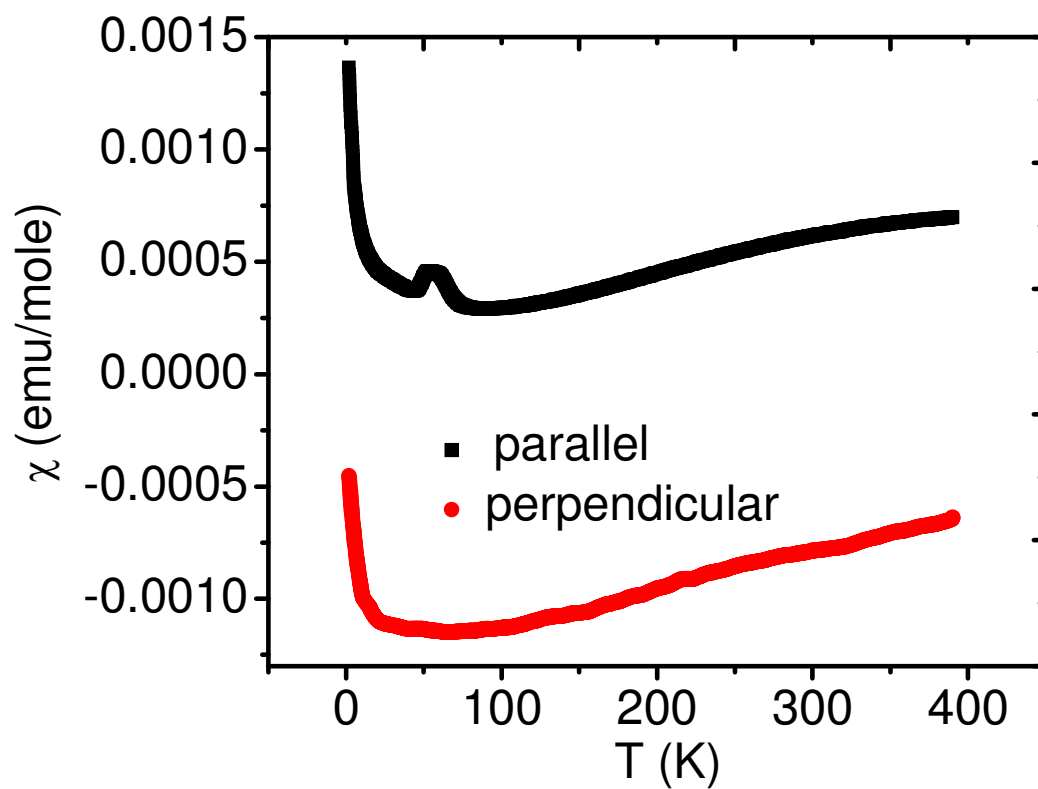
---



**Figure S1.** The experimental powder pattern of YbCu<sub>4</sub>Ga<sub>8</sub> (**3**) was compared to the single crystal X-ray structure refinement of the superstructure YbCu<sub>4</sub>Ga<sub>8</sub> (**2**) and substructure of YbCu<sub>4</sub>Ga<sub>8</sub> (**1**). Superstructure reflections are marked as a, b, c and d, which are comparable with experimental pattern (marked as a, b, c and d). \* represents unreacted Ga-metal peak.



**Figure S2.** Expanded view of the Figure S1 showing the superstructure reflections more clearly.



**Figure S3.** Magnetic susceptibility measured on a single crystal of  $\text{YbCu}_4\text{Ga}_8$  in two different orientations, magnetic field along the  $c$ -axis ( $H \parallel c$ ) and magnetic field perpendicular to the  $c$ -axis ( $H \perp c$ ).