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Discovery and development of x-ray diffraction YEUNCHEOL JEONG, University of South Carolina, MING YIN, Benedict College, Columbia, SC, TIMIR DATTA, University of South Carolina — In 1912 Max Laue at University of Munich reasoned x-rays to be short wavelength electromagnetic waves and figured interference would occur when scattered off crystals. Arnold Sommerfeld, W. Wien, Ewald and others, raised objections to Laue's idea, but soon Walter Friedrich succeeded in recording x-ray interference patterns off copper sulfate crystals. But the Laue-Ewald's 3-dimensional formula predicted excess spots. Fewer spots were observed. William Lawrence Bragg then 22 year old studying at Cambridge University heard the Munich results from father William Henry Brag, physics professor at Univ of Leeds. Lawrence figured the spots are 2-d interference of x-ray wavelets reflecting off successive atomic planes and derived a simple eponymous equation, the Bragg equation d*sin(theta)= n*lamda. 1913 onward the Braggs dominated the crystallography. Max Laue was awarded the physics Nobel in 1914 and the Braggs shared the same in 1915. Starting with Rontgen's first ever prize in 1901, the importance of x-ray techniques is evident from the four out of a total 16 physics Nobels between 1901-1917. We will outline the historical back ground and importance of x-ray diffraction giving rise to techniques that even in 2013, remain work horses in laboratories all over the globe.

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