

# 전자현미경 데이터 분석용 교육 응용프로그램 내용 (2023.7.17. - 2.21.)

명 칭	내 용	기능 및 적용
1 MacTempasX (Total Resolution LLC)	Multislice이론을 중심으로한 HRTEM의 image/회절패턴 simulation기능에, STEM, CBED계산이 가능하며, image의 정량적비교와 구조정밀화가 가능한 simulation응용프로그램	<ul style="list-style-type: none"> <li>- HRTEM Simulation of HRTEM images, Diffraction Patterns, CBED Patterns and STEM images</li> <li>- Quantitative image comparison</li> <li>- Structure Refinement</li> <li>- General Real Space and Reciprocal Space image processing</li> <li>- Crystallographic Image Processing</li> <li>- Geometric Phase Analysis, Peak Finding, Peak Fitting</li> <li>- Lattice Refinement, Quantification of Diffraction Patterns</li> </ul>
2 CrystalMaker X (CrystalMaker Software Ltd)	실물같은 결정 및 분자구조를 용이하게 생성하여 가시화하는 응용프로그램으로, 옵션으로 CrystalDiffract (분말회절) soft, SingleCrystal (X선, 중성자, TEM단결정회절) soft를 사용 각 회절패턴의 simulation 가능	<ul style="list-style-type: none"> <li>- Build, display &amp; manipulate all kinds of crystal and molecular structures</li> <li>- Design new materials and relax their structures</li> <li>- Animate structural behaviour; generate video for teaching or presentations</li> <li>- 3D Print models; create rotatable 3D models</li> <li>- Simulate diffraction properties for powders and single crystals</li> </ul>
3 GPA (HREM Research Inc)	Geometric Phase Algorithms (GPA, developed by M. Hytch) 으로 HR-S/TEM images로 부터 2차원 strain의 정량분석 응용프로그램	GPA generates fully quantitative deformation and strain maps from standard HR-S/TEM images and any type of lattice image (Digital Micrograph plug-in). GPA is based on geometric phase algorithms originally developed by M. Hytch.
4 DeConvEELS (HREM Research Inc)	Zero-loss 또는 low-loss spectrum을 이용해서 Electron Energy Loss Spectrum (EELS)을 deconvolution해서, 에너지분해능을 향상시키는 응용프로그램 (Software Monochromator)	DeConvEELS is the software for rectifying Electron Energy Loss Spectrum(EELS) by deconvoluting it with a low-loss or zero-loss spectrum. , and thus is a software monochromator (Digital Micrograph plug-in). DeConvEELS uses a Maximum Entropy Method or the Richardson-Lucy Algorithm.
5 qHAADF (HREM Research Inc)	Quantitative HAADF(qHAADF) Analysis는 원자분해능 HAADF STEM image를 정량적으로 분석하는 응용프로그램 (탁월한 Image pre-processing기능 포함)	<p>qHAADF performs column-to-column compositional analysis of materials from the integrated intensities of an atomic-column resolved HAADF-STEM image (Digital Micrograph plug-in).</p> <ul style="list-style-type: none"> <li>- Gives a map of integrated intensities and/or composition in materials with atomic-column spatial resolution</li> <li>- Experimental HAADF images are used to obtain the fitting parameters to determine composition</li> <li>- Automatic finding intensity peaks and noise filtering tools</li> <li>- Compositional segregation profile in epitaxial layers, Counts atoms in each atomic column, Interstitial atoms in materials</li> </ul>