Abstract Submitted
for the GEC07 Meeting of
The American Physical Society

Spectroscopic investigations into extraordinary phenomena in hydrogen plasmas with certain catalysts SANDER NIJDAM, ANDREAS VAN DEN BRINK, NIELS DRIESSEN, PETER VAN NOORDEN, RUUD DE REGT, TIM RIGHART, GERRIT SITTERS, EDDIE VAN VELDHUIZEN, RUUD WIJTVLIET, GERRIT KROESEN, Technische Universiteit Eindhoven — In recent years hydrogen plasmas have been created that display extraordinary behavior, like breakdown at low electric fields, anomalous plasma afterglow, excessive hydrogen Balmer-α spectral line broadening and EUV and VUV emission. Experiments have been done on three types of hydrogen discharges in order to reproduce the extraordinary plasma behavior observed. We have investigated these hydrogen discharges with different spectroscopic measuring devices. We focused on broadening of the hydrogen Balmer-α line and the emission of EUV and VUV radiation. The measurements in the visible part of the spectrum have been performed using a B&M100 type (1000 mm) Czerny-Turner monochromator attached to a CCD camera or a photomultiplier. For the VUV and EUV measurements we have used three different monochromators: a Jobin Yvon LHT 30 (320 mm, near grazing incidence), a Jobin Yvon HR 1500 (1500 mm, normal incidence) and a McPherson Model 234/302 vacuum monochromator (200 mm, normal incidence). In all cases a scintillator plate has been used to convert the diffracted UV radiation into visible light which was quantified by a CCD camera or a photomultiplier.

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Date submitted: 15 Jun 2007 Electronic form version 1.4